

*Hornady Handbook
of
Cartridge Reloading*

**Rifle-Pistol
Fourth Edition**

Hornady Manufacturing Company

Grand Island, Nebraska 68802

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HORNADY MANUFACTURING COMPANY, INC.
GRAND ISLAND, NEBRASKA
U.S.A.

FIFTH PRINTING 1996

All loading data contained in this book is the result of testing by the Hornady Manufacturing Company. Under carefully controlled conditions and with the components and test equipment specified, this data proved safe in our testing. Since the Hornady Manufacturing Company has no control over the components and equipment which may be used with this published information, no responsibility is implied or assumed for results obtained through its use.

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ACKNOWLEDGEMENTS/FOREWORD

This, the fourth edition of the Hornady Reloading Manual, required years of experience and working knowledge and tens of thousands of hours of labor. It is not the product of a single person, but rather the product of a company, Hornady Manufacturing.

There are, however, individuals that deserve special mention. First are the laboratory personnel who assembled and fired hundreds of thousands of rounds of ammunition to test pressures, velocities, and bullet quality. This staff includes Bob Palmer, Lowell Hawthorne, Kevin Sok, Doug Derner, Kevin Nielsen, and Jason Hornady. Second, engineer Larry Hoback was of great assistance in setting up computer programs. Also, we should mention the typists and Kathy Hamilton Dix of Type Art Inc. for their assistance in art work and typesetting.

Finally, the following manufacturers of firearms, powder and primers provided us with invaluable assistance, products and encouragement:

Beretta USA	Savage Industries, Inc.
Browning	Thompson-Center Arms
Colt Firearms	U.S. Repeating Arms Co.
Dakota Arms, Inc.	Universal Firearms
Dan Wesson Arms	Weatherby
GLOCK	Accurate Arms Co. Powder
Federal Cartridge Co.	Hercules/Alliant Powder Co.
Freedom Arms Co.	Hodgdon Powder Co., Inc.
Marlin Firearms Co.	IMR Powder Co.
Remington Arms Co.	Scot Powders
Smith and Wesson, Inc.	Winchester/OLIN
Sturm, Ruger, and Co.	

We at Hornady feel that all of these individuals and firms have contributed to the assembly of the finest reloading manual available today.

INTRODUCTION

It's simple! Reloading is the safe, practical and easy process of returning a fired cartridge to its original loaded condition. It's almost as if you are reversing the firing process.

Do you need special training or a degree in physics to reload? No, thousands of new reloaders begin by simply picking up a Hornady Reloading Manual and following the steps of reloading. If read thoroughly and a few safety precautions are followed, you will very shortly be producing quality ammunition, tailor-made for your gun.

If you are already a reloader, you will find valuable data for new calibers, data for new powders, and data for new bullets. All reloaders and shooters will appreciate the newly organized and updated ballistic charts for a variety of applications, and wind drift tables and uphill-downhill tables in Volume II.

These charts and tables are useful for target shooters, varmint hunters and big game hunters alike.

We think the fourth edition of the Hornady Reloading Manual is the best and most useful manual produced today. We think you will agree. Have fun reloading and safe shooting.

Sincerely,



Todd Georgi
Editor
Hornady Manufacturing, Inc.

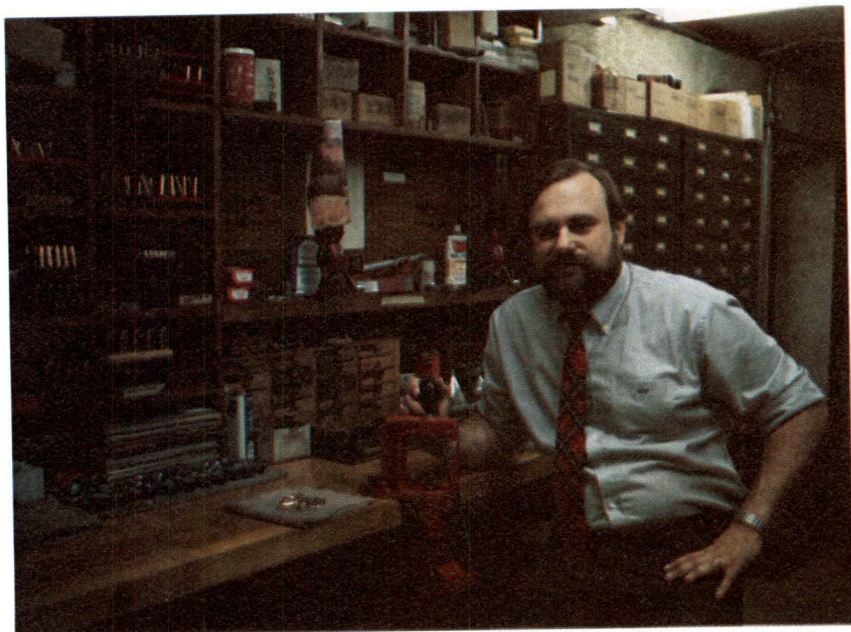


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HISTORY OF HORNADY MANUFACTURING

"Ten bullets through the same hole" was the philosophy of Joyce Hornady, the company's founder. This idea of accuracy and perfection has continued from the first bullet to today.

Nebraskan Joyce Hornady, an ardent shooter, constantly needed a supply of good, accurate bullets. While commercially available bullets were usable, Joyce felt that better bullets could be made. Using his training as an engineer, he and Vernon Speer built a machine that converted empty .22 rimfire cases into bullet jackets and then into bullets. Advertised in the *National Rifleman*, these bullets sold well all over the country.

December 7, 1941, changed most Americans' lives however, including the Hornadys'. Joyce got a job in a guard training unit at the Grand Island arsenal. He and his family of three moved from Lincoln to Grand Island in central Nebraska. Shortly after the war, shooters and hunters used some of the vast surplus of military ammunition. This surplus ammunition, however, did not offer the accuracy or performance needed for target shooting, big game or varmint hunting. Joyce realized the need for better bullets and he responded to it. Using a surplus Waterbury-Farrel bullet assembly press, he began to produce a 30 caliber, 150 grain spire point bullet. From the initial production in 1949 to today, this bullet remains one of the most popular produced.

The first year yielded a total sales of \$10,000, hardly enough to support the small but growing company. By 1950, sales were up threefold and there were four full-time employees, housed in an old garage. With hard work, resourcefulness and hard to obtain loans, equipment was added, more employees hired, production increased. The Korean

War, however, halted further growth. Raw materials were allocated for war production. During this time, Hornady Manufacturing produced a variety of products not associated with bullets, products like aluminum hearts for bracelets and condenser cans for the government. After the conflict, surplus condenser can material became the ultra thin jackets of Hornady SX varmint bullets.

By 1958 continued growth forced the company to move production from its location in a rented garage to an all new factory on the west edge of Grand Island. This new 8,000 square foot facility included a 200 yard underground tunnel for extensive ballistic testing, a shooting range necessary for creating bullets that would yield the best accuracy and reliable expansion. This testing led to a change in the design of Hornady bullets. Previously, all pointed bullets had an angular, pencil point shape, but the new secant ogive shape gave a streamlined, ballistically efficient shape still retained on Hornady spire point bullets. In a few years, production had increased leading to further expansion (now up to 25,000 square feet) and the number of full-time employees increased to 40.

By the mid-1960s the Hornady bullet line ranged from 22 caliber to the large 458 caliber bullets. Hornady bullets were and continue to be well respected by shooters, hunters and competitors for their quality and performance.

Since not all hunters and shooters are reloaders, Hornady, in 1964, introduced the Frontier line of ammunition. Initially, Frontier ammunition consisted of five cartridges that were military cartridges (such as the 30-06) or could be formed from fired military brass (such



Part of the Hornady bullet production factory.

as the 270 Winchester). Of course then as now, the bullets were pure Hornady. Shooters were very pleased with this new product. The Vietnam War and customer demand, however, caused a shortage of military brass. Because of this shortage, Frontier ammunition was loaded with new brass cases. Frontier ammunition, now Hornady ammunition, has earned a well deserved reputation of superb performance and excellent accuracy. Again Joyce Hornady's "ten bullets in one hole" philosophy prevails. Also, during this period, Hornady acquired Chronolux, an electronic sign company.

In 1970, Steve Hornady joined the company on a full-time basis. By this time Hornady Manufacturing had become the world's largest independent manufacturer of bullets. Frontier ammunition continued to prosper, and the next logical acquisition was the purchase of Pacific Tool Company, a producer of reloading tools and equipment. Pacific Tool Company originated in California and had invented the "C" type metallic reloading press in 1928, a tool that began the modern era of reloading. Pacific was eventually purchased by investors and relocated in Lincoln, Nebraska. New products and tools were introduced, including the first really practical shotshell reloading tools. In 1971, Hornady Manufacturing purchased Pacific Tool, Western Gun and Supply (a wholesale business), and 3-D Ammunition. These sideline businesses were sold in a few years allowing Hornady to concentrate on bullet production and tools.

In 1972, Pacific Tool Company moved to Grand Island. A major product of Pacific at this time was the model 105 shotshell reloader. It was inexpensive and an excellent tool for the beginning or casual reloader. The model 105 initiated a strong growth in Pacific and shotshell reloading itself. By 1973, sales tripled from the 1971 figures and have continued to prosper ever since. Also, in 1972, Marval Hornady, Joyce's wife who had always been involved in the company, started working full-time in the Grand Island facility. She continues her work at Hornady as Chairman of the Board and Secretary of the Corporation.

Throughout the 1970s the Hornady companies continued to grow and expand. New bullet weights and designs were introduced, new calibers were added to the Frontier line as well as a variety of bullet choices, and new reloading products and tools were designed and produced. Innovation, continued effort, and quality were the keys to success for Joyce Hornady. Shooters and hunters worldwide responded to his efforts by purchasing products from the Grand Island company.

The Interlock bullet designed and introduced in 1977 is standard for Hornady hunting bullets. Its interlock ring locks the core and jacket together, minimizing the chance of separation and insuring exceptional terminal performance.

The Model 366 shotshell was continually refined and is today the standard for affordable, progressive shotshell reloaders.

The Model 0-7 metallic shell reloading press introduced in 1979 and

later changed into the 00-7 press was awarded the American Firearms Industry for Outstanding Achievement in 1980. It was the first of a series of new products utilizing new designs, modern materials and innovative concepts.

In the late 1970s Hornady Manufacturing acquired West Coast Shot Company, later renaming it Hornady Magnum Shot. Hornady Magnum Shot is located in Nevada and like Hornady Bullets produces a premium product of hardened lead shot.



*A Hornady
bullet press
operator fine
tunes his
machine.*

In January, 1981 tragedy struck. Joyce Hornady, engineer Edward Heers and Customer Service Manager Jim Garber were killed when the company plane they were flying crashed en route to the SHOT-Show in New Orleans. The loss was tremendous, but the philosophies and ideals of Joyce Hornady were maintained. Steve Hornady became president and Margaret Hornady David and husband Don David moved to Grand Island to become vice president and chief engineer respectively.

In 1983 the Pro-7 progressive metallic shell reloader was introduced. It is a highly sophisticated but easily operated reloader, affordable for most reloaders. It produces large numbers of reloaded ammunition in both rifle and pistol calibers, allowing for more time to be spent shooting and less time reloading. The Pro-7 has been upgraded to the Pro-jector Progressive with automatic priming, automatic indexing, brass kicker power-pac linkage, five station die platform and an optional auto powder drop system. Changing calibers is simple requiring only the switching of the standard reloading dies and an easily changed shell plate. Many reloaders consider the Pro-jector Progressive reloader to be the finest available.

In 1983, Frontier Ammunition and Pacific Reloading Tools were renamed Hornady Ammunition and Hornady Reloading Tools, to reflect the merger of the individual companies (including Hornady Magnum Shot) into one corporation with operating divisions.

In 1988, Hornady Reloading dies were redesigned and improved, producing a better product at a lower cost. These new dies, the New

Dimension reloading dies, incorporate a number of important and useful features such as the in-line bullet seater which produces better bullet concentricity and the elliptical expander which reduces friction and case stretching and makes "necking up" operations a snap. Also, the expander spindle *is one piece* and guaranteed unbreakable plus the dies have wrench flats manufactured on the die body and on the "Sure Loc" ring.

1990 saw the development of 23 new pistol bullets in the new XTP bullets. XTP stands for eXtreme Terminal Performance, reflecting the modern design of these bullets. They expand at a wide range of velocities, yet are constructed to penetrate deeply and hold together. Their accuracy is superb, and combined with their expansion performance the XTP bullet sets the industry standard for the 1990s. Hornady XTP received the Product Award of Merit 1990 from the National Association of Federal Licensed Dealers.

Today, Hornady Manufacturing has over 140 employees and occupies 70,000 square feet of a plant which produces more bullets in one day than the entire first year's production.

What else does the future hold for Hornady Manufacturing? Ideals and practices of the last 40 years, such as quality, innovation, perfection and "ten bullets through the same hole" will keep Hornady Manufacturing in the forefront of the shooting industry.



A Hornady ballistician prepares loaded cartridges for accuracy tests.

NOTES

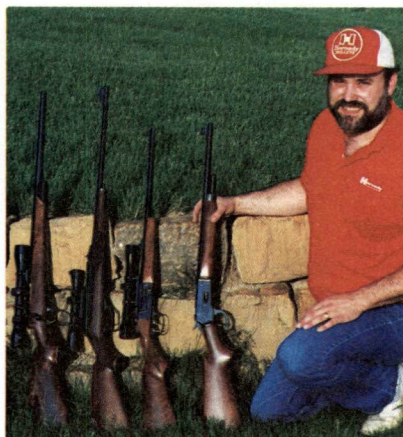
*Reloading and
Bullet Accuracy*

FIRING A CARTRIDGE



Accuracy is the theme of this section of the *Hornady Handbook*; what accuracy is, where it comes from, and how the shooter can obtain more of it. We'll demonstrate in the following pages that it's possible for the shooter to do something about accuracy problems if he understands their origins and takes the right steps to correct them.

Factory ammo is, and must be, manufactured to specifications which will insure its functioning satisfactorily despite a wide range of chamber tolerances in a variety of bolt, slide, lever, autoloading, and



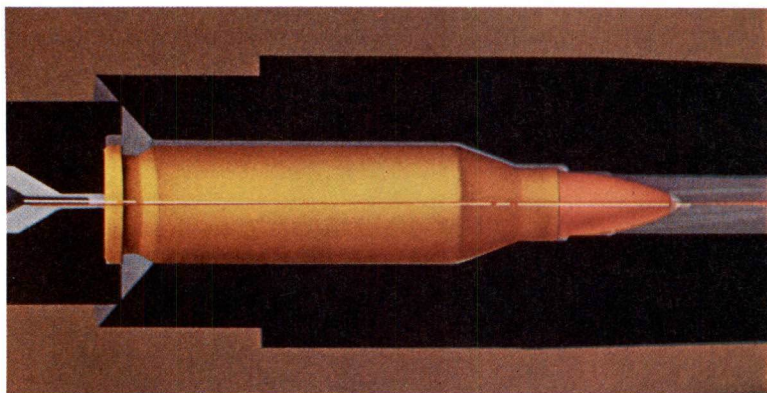
single shot rifles . . . both domestic and foreign. Factory ammunition must necessarily forego some accuracy potential for the individual rifle, to perform satisfactorily in all the different rifles in which it may be used.

Handloads, however, can be made up for the individual rifle and its chamber *without* compromises and so can bring out its best capabilities.

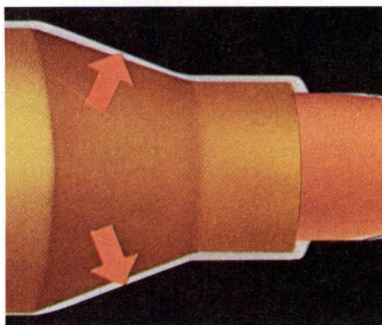


Handloading your own ammunition — ammunition of excellent quality, custom tailored to your own rifle, and your own shooting needs — could hardly be easier or safer. It requires only four different components (empty cases, primers, powder, and bullets) and this basic equipment: a powder measure, scale, a reloading press, a set of dies, some case lube, and a loading manual. Elsewhere in this book we present detailed step-by-step procedures for reloading rifle and pistol cartridges — plus most of the data required by both the beginner and the experienced reloader, regardless of the caliber of gun or type of target for which they're loading. Our purpose here is to help clarify certain aspects of shooting and reloading which are frequently unknown or misunderstood. The more secure your knowledge of these complex factors, the better will be your chances of obtaining the ultimate in accuracy and performance from your firearm and ammo.

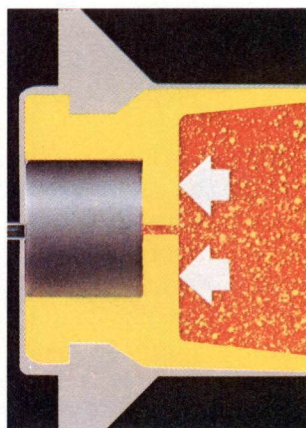
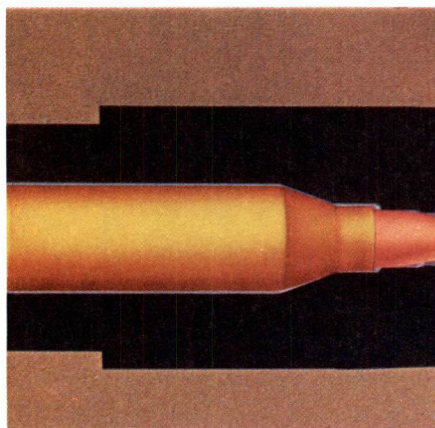
To explain what actually happens in the chamber of a rifle when it is fired, how the case and bullet are affected, we will employ illustrations which exaggerate clearances which would otherwise be difficult to see.



The rimless cartridge shown here (above) is a new factory round which fits the chamber rather loosely; its bullet is not in perfect alignment with the bore; and the case doesn't contact the front of the chamber (right).

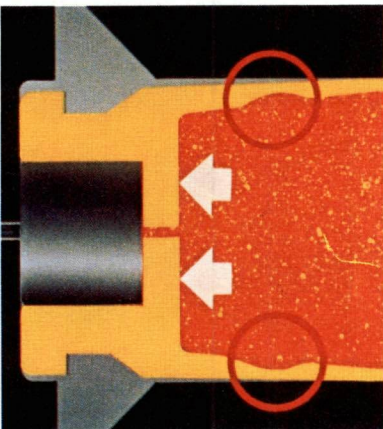
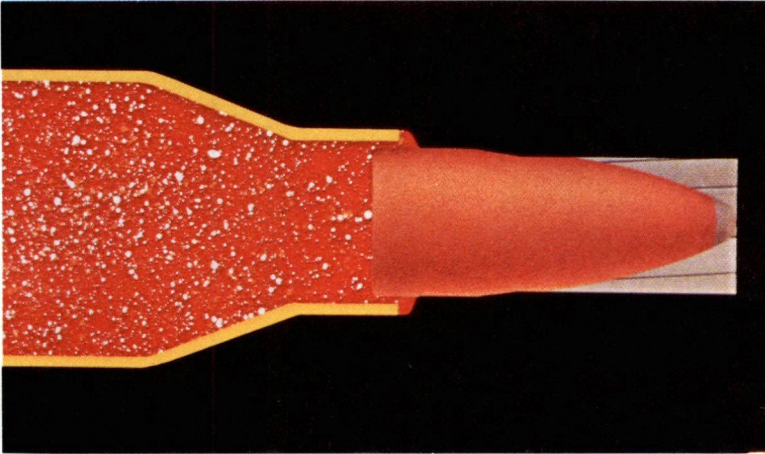
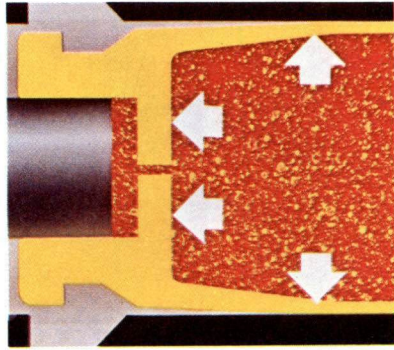


As the firing pin strikes, it moves the case forward to contact the front of the chamber (below, left), giving a little headspace (below, right) — but not a dangerous amount.



Notice that the violence of its flash backs the primer part way out of the pocket (right) — and as the powder is ignited and pressure builds up, the brass case expands to fill the chamber completely (below), preventing any escape of gas to the rear.

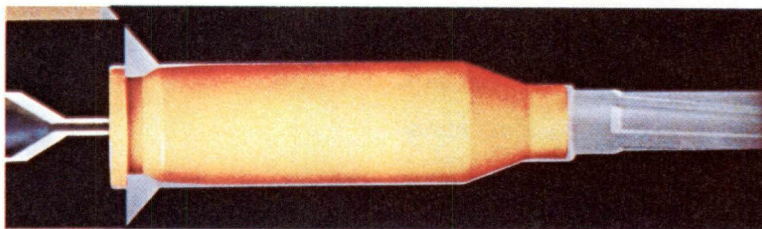
As the pressure continues to build, the case is forced so tightly against the chamber wall that it



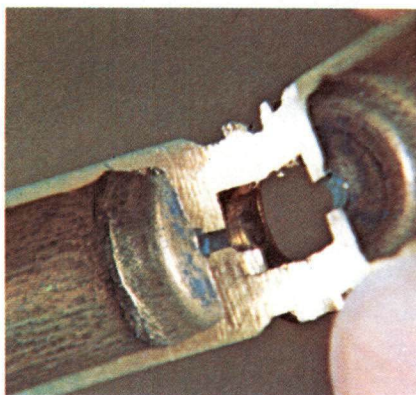
cannot move; but since we had a gap between the base of the cartridge case and the face of the bolt or breech block — what we termed a little headspace — the case itself must stretch in the head region circled to force the case head back.

As the case is moved rearward the primer is reseated in its pocket, when the bullet exits up the barrel the pressure drops, the case cools, and the brass contracts enough to

permit extraction of the fired cartridge case from the chamber (below).

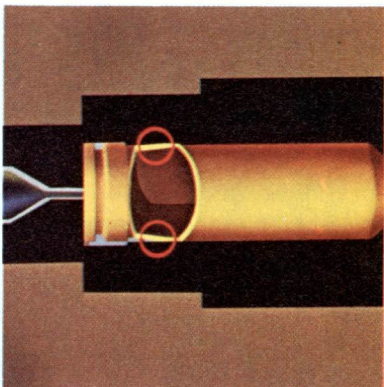
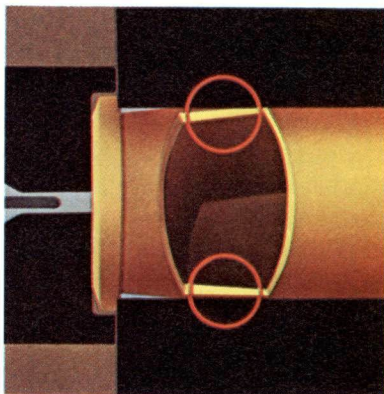
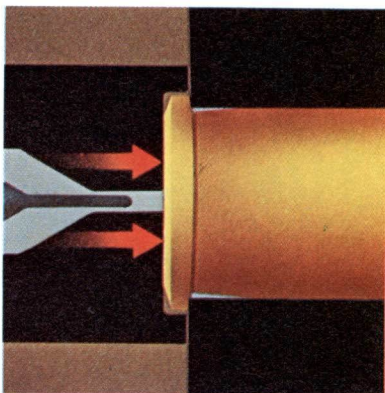


The concept of headspace is one every shooter should understand fully, both in the interest of more accurate shooting and personal safety. In the Illustrated Glossary at the back of this manual we summarize four different headspacing systems and define the term very simply as "the fit of a cartridge in a chamber measured as the distance from the breech face to that part of the chamber which stops the case's forward movement." As we have just seen with this rimless case, an imperfect fit of the cartridge in the chamber will result in case stretching in the critical head region. Fired in a chamber having considerable headspace, this 308 Winchester case (below, left) has had its wall thickness substantially reduced at the critical head region — and would almost certainly have separated on the next firing — as did this case (below, right). Such a rupture might permit gas to escape rearward through the action, endangering the safety of the shooter.



Next we'll illustrate another type of case with a different headspacing system; the rimmed case. When the primer in this case is struck by the firing pin (right), the case itself cannot move forward appreciably because it is the *rim* and not the shoulder which stops its forward movement and thus positions it in the chamber. As the powder is ignited and pressure builds inside the case, its thin walls readily expand to contact the chamber; but because the rimmed head is virtually in contact with the bolt face or breech block the case (below, right) will not stretch as much in the critical head region as did the rimless case we first illustrated — unless the action used is an exceptionally weak one.

The belted case — often used in so-called "Magnum" cartridges — is a third type of design frequently encountered. The "belt" is in effect a rim moved to the front of the head rather than being at the rear. When this type of cartridge is struck by the firing pin it is moved forward only slightly, regardless of the space at the shoulder. When it has been fired (right) there is very little stretch in the critical head region; however, if headspace is not close the case will stretch just above the belt.



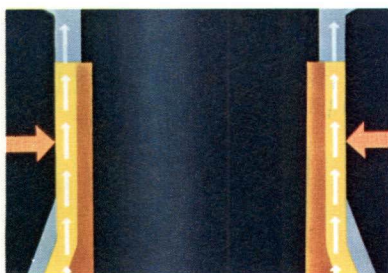
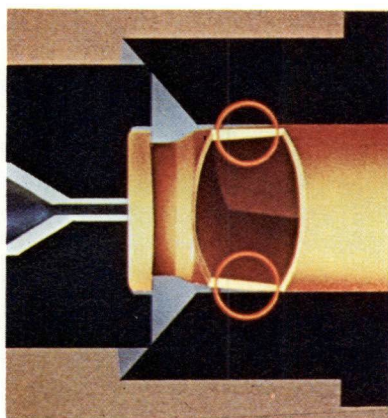
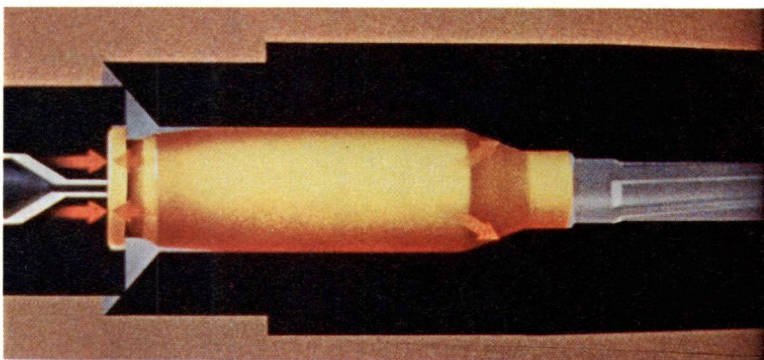
A cartridge case plays a demanding role in the process of firing. It must contain hot gases under immense pressures and seal the chamber to prevent their rearward escape. Despite safety features incorporated in modern rifle actions, case failure resulting from faulty headspacing poses possible dangers to the shooter. As we'll show, the careful reader who understands the concept of headspace can take steps to minimize the risks of case separation.

To review our discussion up to this point, we've established that factory ammunition, manufactured to function in a wide variety of actions and chambers of varying dimensions, will be an imperfect fit in the individual rifle. The bullet will not necessarily be in perfect alignment with the bore; and the case will expand on firing to conform to the dimensions of the chamber when the cartridge is fired. If headspace is not close there will be some stretching or thinning of the case wall in the process.

But while our case conforms perfectly to the chamber in which it has been fired, one important dimension has been changed so that it cannot be reused as is: the case neck has expanded to release the bullet and is now too large to hold a new bullet securely. This brings us face to face with a decision which plagues and confuses many reloaders: whether they should full-length resize their cases, returning them to standard dimensions — or whether they should resize the necks only.

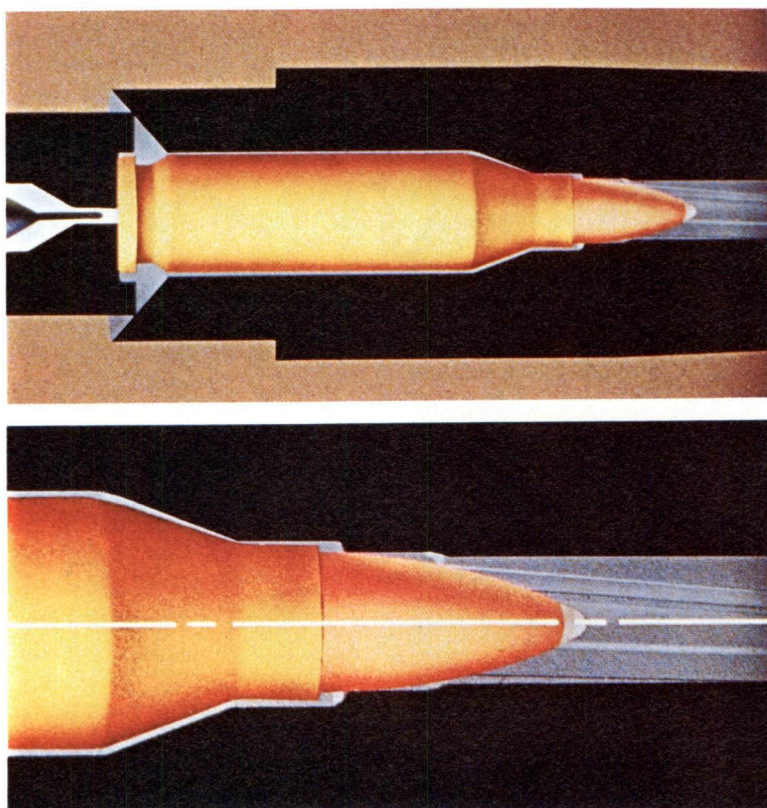
Let's examine the process of neck sizing to see what advantages it affords. Most cases can be neck sized in a normal full length die just by unscrewing it slightly, though a proper neck sizing die is preferred. Since the body of the case will not be worked in the die, it is not necessary to lubricate the full case. It is necessary only to dip the neck lightly in a dry lubricant, such as powdered graphite, to prepare for the resizing operation. A new primer, some new powder, and a new bullet get the case ready for reuse.

Though some rifles deliver their best groups when full length resized, neck sizing only usually promotes better accuracy, because when our reloaded cartridge is returned to the chamber it is almost a perfect fit; headspace is just right with *all* cases, whether rimmed, belted, or rimless; and most helpfully of all, the new bullet is almost perfectly aligned with the bore.



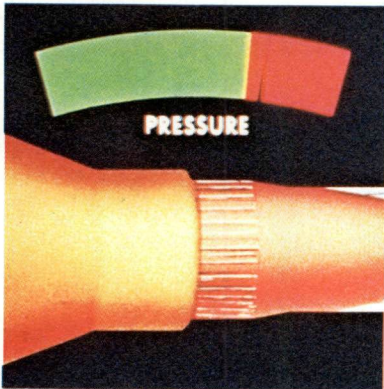
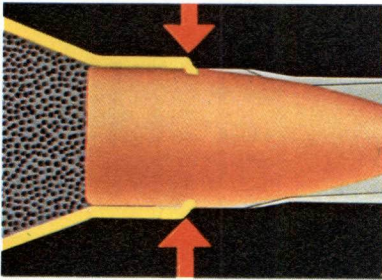
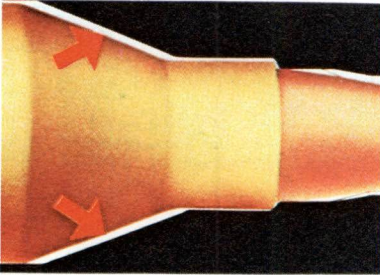
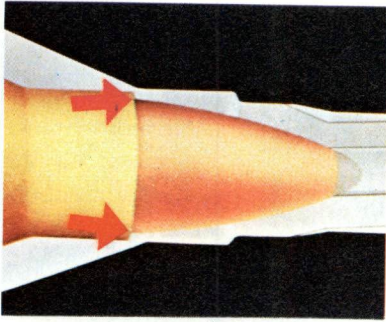
Observe what happens when this reloaded cartridge is fired: the striker does *not* drive the case forward because the shoulder is already in virtual contact with the chamber (above); and headspace is minimum. The case is not subject to stretching in the critical head region (left) as it was when fired originally.

Some reloaders may wonder why it would not be possible to adjust a full length size die to eliminate excess headspace and obtain the advantages we've just noted for the process of neck sizing only. To get the answer to this question we'll return to our cutaway illustrations. The full length sizing die, though adjusted for minimum headspace, "works" the brass, eventually making it flow into the neck area thereby lengthening the case (left).



When the reloaded cartridge is returned to the chamber, it doesn't have excess headspace — but it's almost as loose a fit as it was when brand new (above, top). One benefit full length resizing provides (if done with minimum headspace) is in aligning the bullet well with the bore (above, bottom), through some misalignment may still be possible due to case or chamber eccentricities.

Repeated full length resizing will keep lengthening the case until it must eventually be trimmed, possibly after only three or four rounds. The reasons for this are simple. The case body expands on firing; and its diameter is reduced in full length resizing. The brass displaced must go somewhere — and it does; it is pushed upward to lengthen the case.



When an overlength case is chambered, the mouth or edge of the neck will come up against the throat (top) before the bolt has fully closed or the case shoulder has contacted the chamber (upper middle). The camming action of the bolt is so powerful that it will actually crimp the case mouth fully into the bullet (lower middle) and wedge the case so solidly between the bullet and the throat that the neck cannot expand to release the bullet. Chamber pressures in this situation can and most certainly will go dangerously high (bottom).

There will be ample evidence to confirm the existence of dangerous pressure levels directly attributable to the overlength cases. The shooter may get belted sorely in the cheek; the bolt may have to be hammered open; and the case head may present clear indications of too much pressure (below, left). The primer will be excessively flattened; there will be a crater around the firing pin indentation; and brass may have extruded into the ejector slot.



If the case head is miked (above, right) it may show expansion — and even half of one thousandth of an inch (.0005") increase in the diameter of the case head is an indication of high pressure.

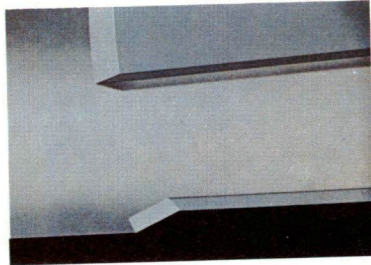
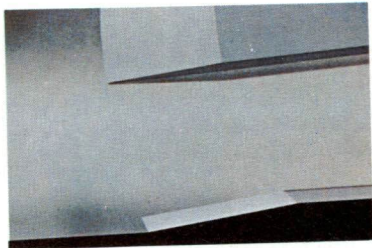
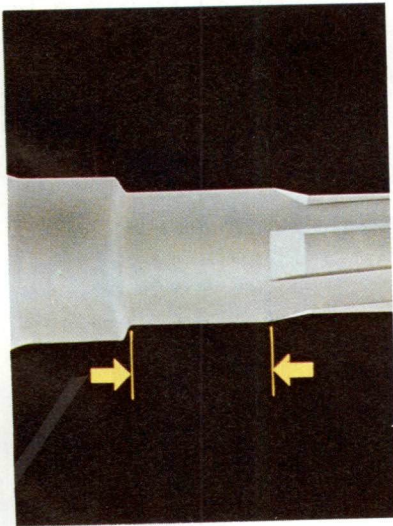
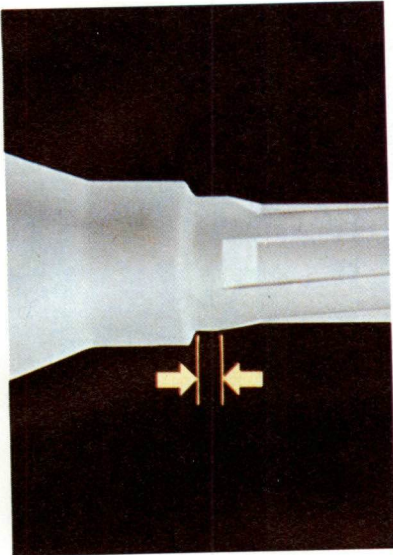
Case lengthening produced by repeated full length resizing will shorten case life. Continuous working of the cartridge brass between chamber and die stretches it, eventually producing cracks in the case and finally complete head separation. Hot loads, even if necks are trimmed as called for, speed up this process.

If optimum accuracy and prolonged case life are important to the reloader, our advice is to neck size only whenever practical. There are, of course, situations in which it is advisable to full length resize. Shooters reloading for pumps, lever actions, and autoloaders must do so to facilitate reliable chambering. A lever action, for example, doesn't have the powerful camming action of a bolt action and may not easily chamber cases larger than factory standards. Shooters who reload cases from one bolt action for another will also find it necessary to full length resize. Even shooters reloading for only one bolt action will occasionally need to full length resize for the sake of easy clearance; over repeated firings the case may conform more and more tightly to chamber dimensions, making chambering and extraction increasingly difficult.

While the issue of cartridge case to chamber fit is of vital importance to the subject of accuracy, bullet seating has a considerable effect on accuracy in many rifles — and on pressure and velocity as well.

The section ahead of a rifle's chamber just before the rifling starts (below) is called the "leade," throat, or "freebore" and is really the bore of the barrel with the rifling reamed away. As our bottom three illustrations show, it varies considerably in length and in the angle at

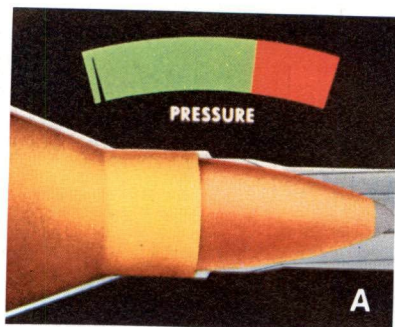
which the rifling is cut, depending on the views of different factories, cartridge designers, and barrel and gun makers. Normally it is quite short and the rifling starts perhaps only a 32nd of an inch from the bullet; but in some rifles the freeboring might allow over half an inch of bullet travel before it contacts the rifling firmly.



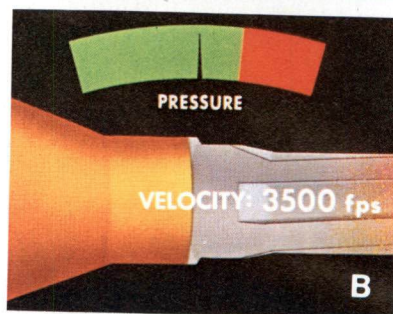
To illustrate the effects of variations in bullet travel before the bullet enters the rifling, we'll compare a standard load with adjustments made only in the bullet's seating depth.

In a "normal" load with the bullet seated to allow about a 32nd of an inch gap (A) between the bullet and the initial contact with the rifling, pressure builds very smoothly and steadily even as the bullet takes the rifling. Pressure remains safe throughout the powder burning period (B), and the velocity obtained — 3500 fps — is "normal" for this load in this rifle.

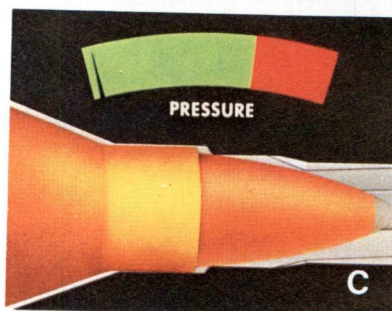
Seating the bullet deeper to allow more travel before it takes the rifling, as in these next two illustrations, permits the bullet to get a good running start (C). Powder gases quickly have more room in which to expand without resistance, and their pressure thus never reaches the "normal" level. Nor does the velocity; with the same powder charge it only comes to 3400 fps (D).



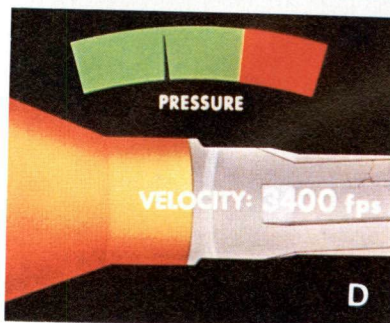
A



B

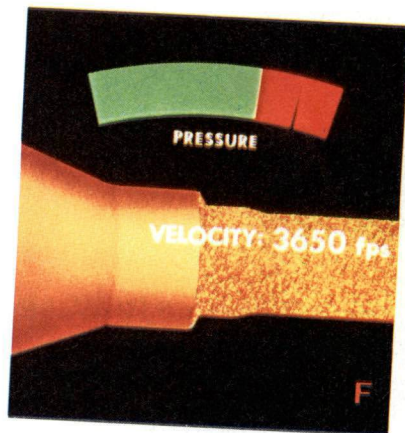
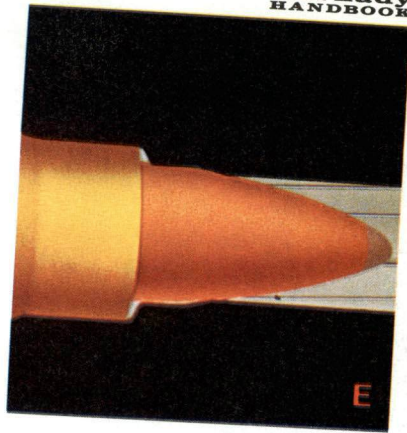


C



D

When the bullet is seated to touch the rifling, as in the accompanying illustrations, it does not move when the pressure is low (E); and not having a good run at the rifling as did the other bullets, it takes greatly increased pressure to force it into the rifling. As the rapidly expanding gases now find less room than they should have at this time in their burning, the pressure rise under these conditions is both rapid and excessive (F). Velocity is high at 3650 fps — but at the expense of rather dangerous pressure.



Many rifles deliver their best groups when bullets are seated just touching the rifling. Seating bullets thus can be done quite safely if the reloader will reduce his charge by a few grains. The lighter load will still produce the "normal" velocity without excessive pressure.

This brings up another pointer on accuracy for shooters who may have a few thousand rounds through their rifle barrel and have noted a fall off in the accuracy they can obtain with their standard loads. Hot gases from the shots previously fired through the barrel erode the throat and thus increase the distance a bullet must travel before contacting the rifling. By loading longer bullets and seating them farther out so they'll touch the rifling — making powder charge adjustments as necessary, of course — accuracy can often be improved.

The number of factors affecting the performance of a cartridge is remarkable; we've looked at the cartridge to chamber fit; alignment of the bullet with the bore; the depth to which a bullet is seated and the amount of travel it undertakes before contacting the rifling. The primer, a component many reloaders take for granted, may influence performance if it's not up to the task of igniting densely packed smokeless powder. Some powders burn more uniformly than others and contribute to better accuracy.

The firearm itself may be the cause of inaccuracy if the muzzle is burred, if the throat is eroded in the barrel, or if the trigger is so jerky the shooter cannot maintain his hold from shot to shot. The stock and action must be properly bedded to maintain a uniform fit or inaccuracy may result. Even this list does not exhaust the possible causes of poor accuracy.

A continuous test program is employed to check on our production quality. Our laboratory is equipped with the finest test barrels available and with machine rests which eliminate human variables in shooting so that we can isolate shot-to-shot dispersion associated only with the bullets being tested.

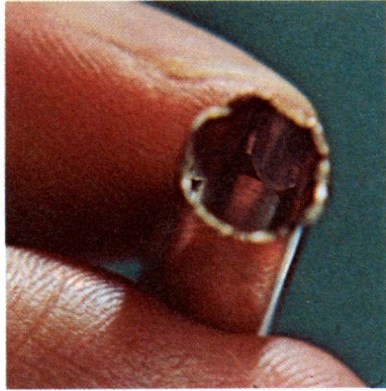


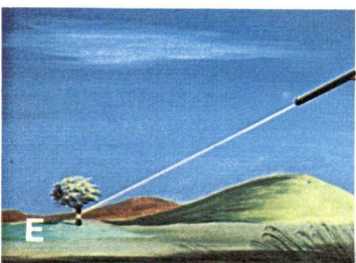
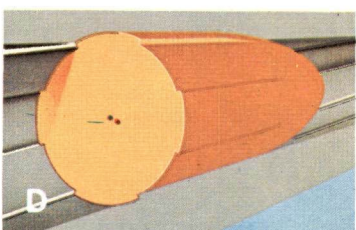
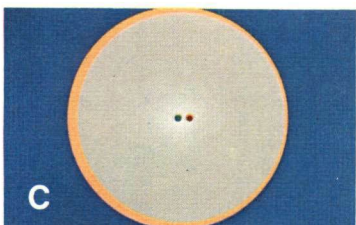
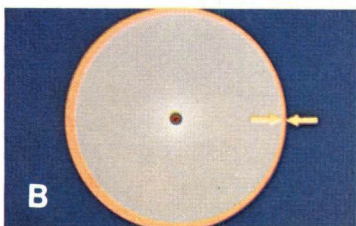
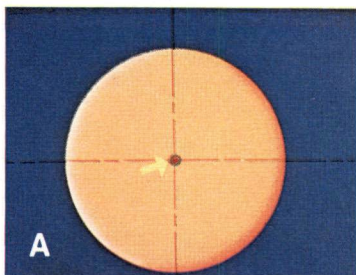
The two targets shown in the accompanying photograph were made firing the same bullets but tested on successive days. The small group met our accuracy standards and illustrates the kind of performance we demand of the product. The larger group was fired from bullets produced after the press making them developed only a few thousandths of an inch play in its cup feeding mechanism. This evidence of misadjustment brought the production to a halt so that the press's problem could be analyzed and corrected.

As we said earlier, accuracy doesn't just happen. You have to make it happen, by paying constant attention to these vital thousandths and ten thousandths of an inch. No matter how perfect the basic design of bullets may be, they aren't going to be consistently accurate unless we can make them all to closer tolerances than, say, a Rolls Royce engine.

Perfect balance is perhaps the most critical factor in bullet accuracy. The attainment of this goal is the major responsibility of design engineers, tool makers, production personnel and plant management.

They have the task of designing production machinery which will maintain near-perfect concentricity in the copper cups from which our jackets are formed in various punch presses. Not only are there multiple steps through which our gilding metal must pass on its way to becoming a finished jacket, the concentricity problem is compounded by our need to internally shape the jacket to control expansion in our hunting bullets (right, above). If the finished jacket is not of uniform thickness around its entire circumference, if it varies by even so little as five ten thousandths of an inch, the resulting bullet will be unbalanced sufficiently to veer from its intended line of flight.





In the accompanying drawings we will let the green dot represent the center of form of this bullet, a point at the actual dimensional center of the bullet. The red dot indicates the center of gravity of the bullet; both of these points should coincide exactly (A).

But because the jacket of this bullet was made with a thinner wall on one side, there is more lead there (B) and the center of balance is moved ever so slightly in the direction of the heavier side, perhaps less than a thousandth of an inch (C).

As long as the bullet is in the barrel it rotates around its center of form (D) but when it leaves the barrel it spins around its center of gravity (E) and this causes it to veer slightly off its intended course at a tangent to the spiral described by its center of gravity as it went up the bore.

Less than half a thousandth of an inch error in jacket concentricity can and does have a detrimental effect upon a bullet's course. And because we cannot chamber each bullet with its center of gravity similarly aligned in the barrel, subsequent shots will diverge at arbitrary angles . . . slight though they may be. The final result is a group with more dispersion than we would like.

It is only by minding all those ten thousandths of an inch and tenths of grains in all stages of production that we are able to make millions of bullets capable of exceptional accuracy and in a variety of calibers having expansion characteristics suitable for target, varmint, and big game hunting.

We believe shooters need and want the kind of accuracy we've discussed in this short essay. That's why the people at Hornady Manufacturing take accuracy so seriously. The effort to produce accurate bullets, to *make* accuracy happen, is a joint effort involving many individuals, their skills, and their dedication to the final goal.

Doing your shooting with super accurate and effective cartridges which you yourself have loaded not only provides more shooting for your money but *better* shooting. The accuracy factors that we discussed early in this section have indicated why it is possible to make better ammunition than you can buy.

And reloading can also give the shooter an invaluable sense of pride in his own craftsmanship. It's the same pride that we at Hornady Manufacturing share in producing quality products which can be used confidently and effectively.

NOTES

*Basics of
Reloading*

BASICS OF RELOADING

Introduction

Reloading reverses the firing of a cartridge. If a few common sense rules are followed, it is a very safe and simple process. It can be an interesting hobby, economical and, we warn you, an enjoyable pastime.

If you are to reload centerfire cartridges you must decide what components to use. You will find information on selecting components on the following pages:

Basic equipment.....	23
Cases	24
Primers	27
Powder	28
Bullets	32

The following pages cover the steps of reloading:

I. Case inspection.....	37
II. Case preparation.....	39
III. Case resizing	40
IV. Priming	45
V. Powder charging	46
VI. Bullet seating	47

Please take time to read the following instructions and perhaps, from time to time, review them. We think you will find these step by step instructions easy to follow, and shortly you will be producing quality ammunition on your own.

Why Reload?

This simple question has many answers. Different reloaders have different reasons, but here are some of the usual ones.

Economy

Today, shooting the amount of ammunition required to maintain shooting skills can require a fair amount of money. Factory ammunition for common rifle calibers can cost up to \$25.00 per box of 20 cartridges. Pistol cartridges can cost up to the same amount for 50 cartridges. These same cartridges can be reloaded for \$7.00 to \$10.00 depending on the bullet used, the powder type and the powder charge. The savings can be substantial and with more economical shooting you probably will practice more and improve your shooting skills.

Accuracy

As a reloader, you control many of the variables of a cartridge. You select the primer, the powder, the powder charge, the bullet, the seating depth and case. You tailor the load for your firearm. Factory am-

munition is loaded to fit and function in all guns of a certain caliber. Factories do this with admirable success and usually good accuracy, but the ability to custom tailor a cartridge to your firearm leads to excellent accuracy. Accuracy can be the difference between a hit or a miss.

Hobby

Many reloaders simply enjoy assembling cartridges for their own plinking, hunting or target shooting. It is a productive, useful pastime.

Special Uses, Special Cartridges

Reloading gives you the ability to produce cartridges with a variety of bullet weights, styles, velocities and uses.

Also, there are calibers for which factories no longer produce ammunition or cartridges. The 33 Winchester is one such example. If you have a rifle in this caliber which you want to shoot, you must make your own ammunition. Fortunately, Hornady makes both reloading dies and bullets for the 33 Winchester, and common cartridges can be loaded to make this rifle useable.

There are also calibers that never were produced by commercial factories. These non-commercial cartridges are commonly known as wildcats. Historically, some of the better wildcats have become factory loaded cartridges. These include the 22-250, the 25-06, and recently the 35 Whelen. Many of these wildcats are useful, accurate and perfectly shootable cartridges . . . if *you* reload the ammunition. Hornady Manufacturing produces a wide range of bullets and many die sets for wildcat cartridges so you can reload for a variety of cartridges never available from a factory.

What Equipment is Needed to Begin Reloading?

The basic equipment, in addition to the components and a good reloading manual, consists of the appropriate reloading dies, shellhead holder, a case lubrication system, (lubrication is not necessary when using Hornady titanium nitride dies), a powder scale, a case primer system and a press to perform the heavy operations. Optional, but useful, equipment includes a lube pad and lube, a reloading tray, a chamfering tool, a primer pocket cleaner, primer turning plate, and a powder measure. While each item can be purchased individually, there are complete packages of equipment that save considerable money and measurably increase convenience. Use of this equipment is fully described in the following chapters.

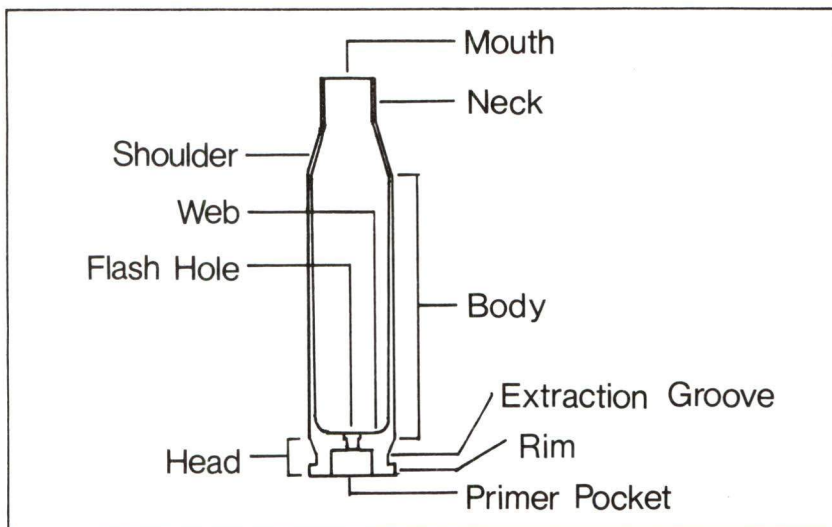
Reloading Components

Four components are needed for reloading: they are cartridge cases, primers, powder and bullets. Descriptions of each component follow.

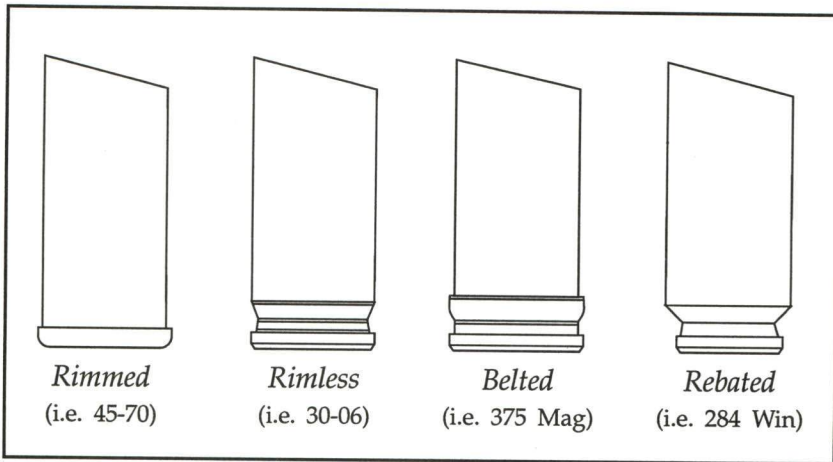
Cartridge Cases

These are the brass containers that hold the primer, powder charge and the bullet, and when ignition occurs, seal the breech of the gun.

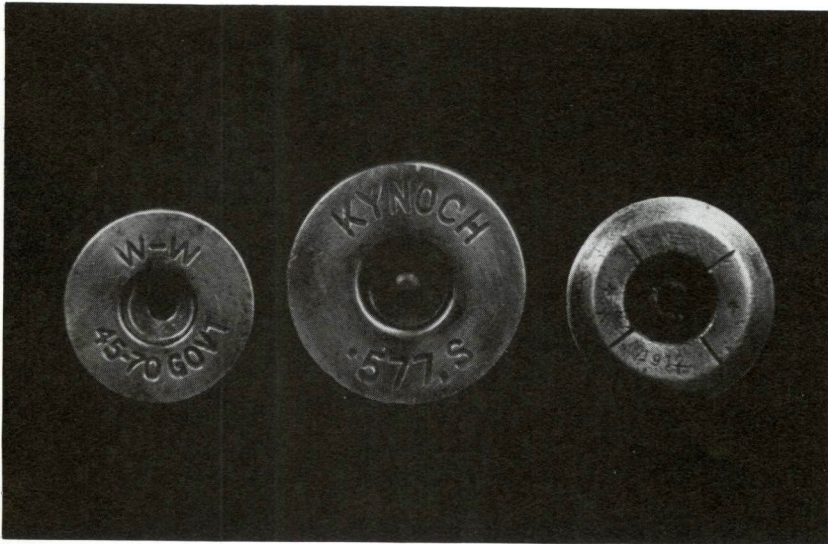
Brass is an alloy of copper and zinc with roughly 70% copper and the remainder zinc. This alloy is formed in a series of steps and then heat treated. The result is a brass cartridge case with a hard head and a softer, more flexible mouth or neck. Cartridge cases come in a variety of shapes, sizes and configurations, and are either bottle-necked or straight sided. Most rifle cases are bottle-necked, while most pistol cases are straight-walled. There are exceptions, for instance the 458 Winchester Magnum is a straight-walled rifle cartridge and the 7mm BR Remington is a bottle-necked pistol cartridge. The following diagram identifies the various parts of a bottle neck case.



If we examine the heads of the cartridge cases, we find a variety of designs for either aiding in extraction, or headspacing. Basically, bottle-necked cases have four head designs. They are: rimmed, rimless, belted and rebated cases. The diagram below illustrates the various case head types:



The primer and primer pocket are in the center of the case head. There is an opening from the primer pocket to the inside of the case known as the flash hole. Most cartridge cases have a single, central flash hole and are easily reloaded. These are known as Boxer primed after the British military inventor, Edward M. Boxer. A Boxer primer is diagramed below.



On the left is a Boxer primer pocket with a central flash hole; in the center is a Berdan primer pocket with two off-center flash holes and a central anvil; and on the right is a rare combination of the Boxer system (with a central flash hole) and the Berdan system (with an anvil as part of the case).

Another type of primer is used, to some extent, in Europe and other countries. This is actually an American invention known as a Berdan primer. The Berdan priming system looks the same from the outside of the case, but it is not. Berdan primers lack an anvil, relying on a similar projection in the primer pocket, and they have two flash holes, located off center. Because of the difficulty of depriming these cases, they are seldom reloaded. Care must be taken to eliminate Berdan primed cases from your supply. Attempts to deprime a Berdan case with conventional dies generally result in damaged dies.

There are several manufacturers of Boxer primers, who generally produce two sizes of primers for pistol and two sizes for rifle cases, known appropriately as large and small pistol primers and large and small rifle primers. Magnum primers, designed to ignite large charges of slow burning powders produce a higher temperature ignition flame of longer duration than standard primers. Obviously, these special use primers are required for certain cartridges and powders. Below is a chart of the various primers available to reloaders and their manufacturers' designation.

— BOXER PRIMER CHART —

Manufacturers	Pistol Primers				Rifle Primers			
	Small Pistol	Small Pistol Magnum	Large Pistol	Large Pistol Magnum	Small Rifle	Small Rifle Magnum	Large Rifle	Large Rifle Magnum
Federal	100	200	150	155	200 205m*	205	210 210m*	215
Remington	1½	5½	2½		6½	7½	9½	9½m
Winchester	WSP	WSPM	WLP		WSR		WLR	WLRM
Omark/CCI	500	550	300	350	400 BR4*	450	200 BR2*	250
RWS/Sinioxid	4031	4047	5337		4033		5341	5333

*These primers are designed and manufactured for bench rest/match shooters and are useful in similar applications as the standard primer.

Selecting a Primer

The cartridge case used will determine which size primer is needed. In general, for either pistol or rifle, smaller cases use the smaller diameter primer, while larger pistol or rifle cases take the large primer. Rifle cases must have rifle primers, small or large, and pistol cases must have pistol primers of either size. Do not try to use pistol primers in rifle cases or rifle primers in pistol cases. Because the striking force of handgun firing pins is usually less than that of rifles, and handguns generally operate at lower pressures, pistol primer cups are made of thinner material. In addition, rifle primers normally have a greater overall height and contain more detonating mix than pistol primers of the same size.

Once the kind, rifle or pistol, and size, large or small, has been determined, the next choice is between standard and magnum primers. Standard primers work in most situations but large cases, or slow powders, or large cases filled with slow powders may require magnum primers. You might note in our cartridge loading data which primer we used in developing the data. Never substitute a magnum primer for a top load you have developed using a standard primer. This change in components, as any component change, can cause unexpected pressure differences. If a component is changed, always start at the lowest powder charge listed and work upwards.

If extreme accuracy is your goal, as in target or varmint shooting, changing brands of primers may give you the accuracy you seek. This does not mean one brand is better than another, only that in certain situations one brand will produce a more accurate load than another. In a different caliber the brands can switch roles in accuracy.

Several manufacturers offer match grade primers. These primers are manufactured under extremely strict quality control and supposedly offer high consistency in ignition, theoretically improving accuracy. In this comparison, all components are the same: same case, same powder lot and charge, same bullet and seating depth, except one group is loaded with a standard primer while the other is loaded with a match grade primer. The results are given below.

Standard Primer

Velocity	Pressure (C.U.P.)
3,289	47,200
3,337	46,400
3,373	50,400
3,316	47,600
3,377	50,000
3,338 Average	48,320 Average
38 S.D.	1,775 S.D.

Match Primer

Velocity	Pressure (C.U.P.)
3,318	46,000
3,318	46,800
3,337	47,200
3,292	47,200
3,318	47,200
3,316 Average	46,960 Average
16 S.D.	600 S.D.

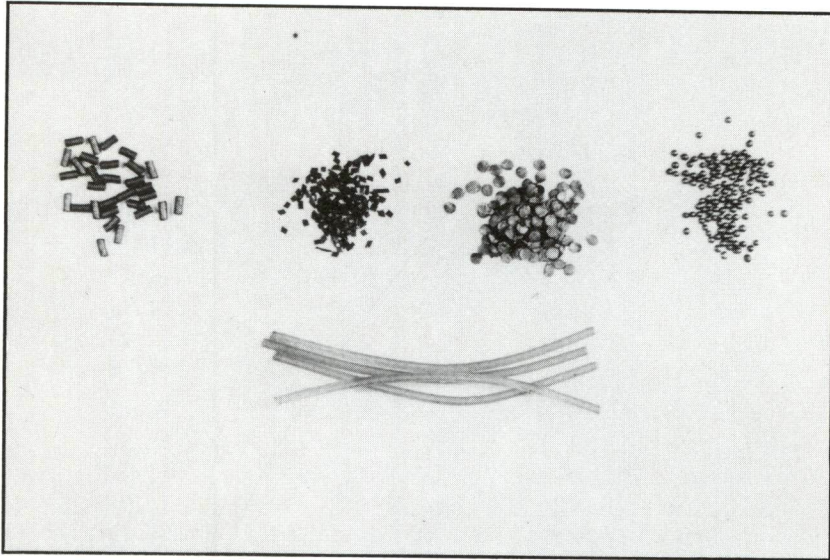
The standard deviation (S.D.), a statistical measure of consistency, shows that the match primers have more consistent results in this test. It should be noted that the standard primers are also quite consistent. Whether or not the more consistent results of the match primer will result in greater accuracy depends on your firearm. It probably requires a match grade firearm to reveal any significant difference.

Powders

There are two basic kinds of powder: black and smokeless. The information in this book is concerned entirely with modern metallic center fire ammunition, thus only smokeless powders are considered. Smokeless powder is a French invention of the late 1800s. It is significant not for its smokeless burning characteristic, but for its ability to propel bullets to much higher velocities than previously possible. These higher velocities required jacketing the lead core. At higher velocities lead bullets heat up in the barrel, increasing the amount of lead fouling.

Smokeless powders are composed of nitrocellulose, or of nitrocellulose and a small amount of nitroglycerine. These are known as single and double base powders. By altering the shape of the powder granule and by adding retarding agents, the burning rate of these powders can be controlled. There are five major shapes of smokeless powder. These

five shapes not only signify control of burning rates, but also indicate manufacturers' different production processes. Pictured below are the five major kinds.



Various types of smokeless powder: on the top, from left to right, the very common, extruded or tubular powder, diamond shaped flat flakes, circular flat flakes, common in shotgun and some pistol powders and lastly ball or spherical powder, also quite common. On the bottom is British cordite; long, thin spaghetti-like pieces of powder. It is no longer in use today.

Manufacturers identify their various powders by letters, names, numbers or combinations of the above. Some manufacturers use the same numbers with a letter in front to designate a different source. These powders can be similar but not identical. Therefore, never switch between similarly named powders without consulting your reloading manual.

Below is a list of powders generally available in the United States from the better known manufacturers. The list is arranged in order of fastest burning to slowest burning.

This is *not* a powder substitution chart. Always refer to the specific cartridge loading data.

Fastest

1. Bullseye	21. 800 X	41. WIN 680	60. Brigadier 4065
2. Royal Scot	22. Solo 1500	42. IMR 4198	61. IMR 4320
3. AA N100	23. SR 7625	43. H 4198	62. H 380
4. AA No. 2	24. 473AA	44. RL-7	63. WIN 760
5. WW 231	25. WSF	45. Brigadier 4197	64. H 414
6. HP 38	26. 540	46. H 322	65. Brigadier 4351
7. Pearl Scot	27. HS-6	47. RE 12	66. H 4350
8. Red Dot	28. Herco	48. IMR 3031	67. IMR 4350
9. 700X	29. HS-7	49. AA 2230	68. H 450
10. WSL	30. 571	50. H 335	69. IMR 4831
11. Solo 1000	31. Blue Dot	51. RE 15	70. AA 3100
12. 452 AA	32. AA No. 7	52. Brigadier 3032	71. RL-19
13. WST	33. 2400	53. AA 2460	72. RL-22
14. TRAP 100	34. AA No. 9	54. WIN 748	73. H 4831
15. Green Dot	35. WIN 296	55. BLC-2	74. IMR 7828
16. Solo 1250	36. H 110	56. IMR 4895	75. H 1000
17. PB	37. 4759	57. H 4895	76. H 870
18. AA No. 5	38. IMR 4227	58. AA 2520	77. H 5010
19. Unique	39. H 4227	59. IMR 4064	78. AA 8700
20. 4756	40. AA 1680		

The chart is approximate as powder burning rates change from production lot to production lot and from one cartridge to another. For example, a certain powder produced in 1983 may have a slightly different burning rate from one produced in 1990. Therefore, its position on the chart will be different. Also a powder may burn at one rate in a 308 Winchester but at a different rate in a 243 Winchester and at a third rate in the 358 Winchester even though all three cartridges have the same approximate volume. Additionally, the differences between one powder and another can vary greatly. For example the difference in burning rate between numbers 23 and 24 may be slight, while the difference between numbers 24 and 25 is pronounced.

Selecting a Powder

There are many smokeless powders manufactured today and in some calibers many of them can be used; however, some powders are more appropriate than others. In developing our data, we have selected what we believe to be the best powder for a specific cartridge. Of the several powders listed, some are slower burning and some are faster burning. When we selected powders for this manual, we chose those most appropriate for a particular cartridge, as well as ones that are usually available throughout the U.S. for the average reloader.

Generally, the faster burning powders have a smaller maximum charge while slower burning powders have a larger maximum charge. Which is better? There is no clear answer as the slower burning powder might give the higher velocity, but one of the faster powders may give better accuracy. Another major variable that must be considered, is your particular firearm. One powder charge may be uncommonly accurate in one firearm, but only moderately so in another. The best powder and powder charge is the one that works best in your own firearm. For this reason, we do not list a specific accuracy load, though usually the powder that most nearly fills the case with the chosen bullet will provide the best accuracy.

Effects of Different Lots of Powder

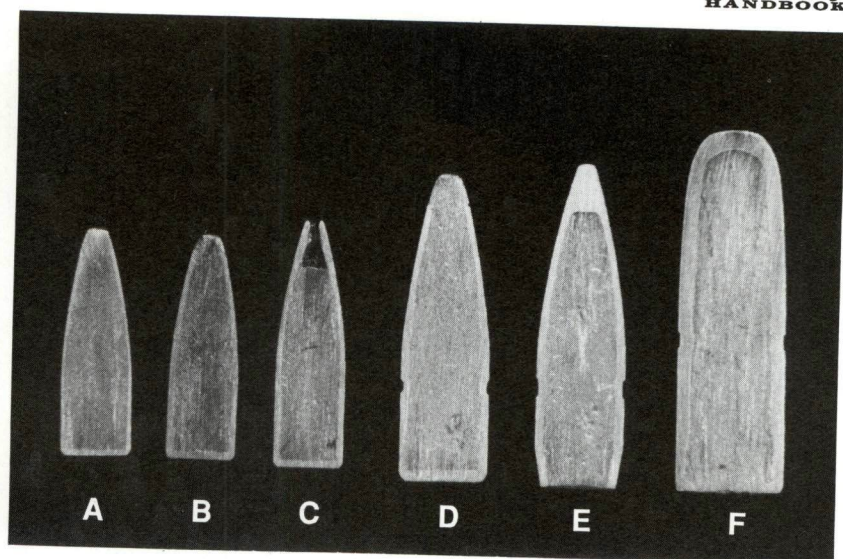
In this test, all components were the same (same cases, primers, bullets), except the powder was from two lots. The manufacturer was the same, but the powders were made at different times. The results are as follows:

	Velocity	Pressure (C.U.P.)
Lot A	2,938 fps	49,600
	2,915 fps	48,400
	2,929 fps	48,800
	2,945 fps	48,400
	2,923 fps	49,200
	2,930 average 12 S.D.	48,800 average 521 S.D.
Lot B	2,909 fps	47,200
	2,948 fps	48,800
	2,906 fps	46,000
	2,911 fps	47,200
	2,891 fps	46,400
	2,913 average 21 S.D.	47,120 average 1,073 S.D.

As this demonstrates, powders not only differ from manufacturer to manufacturer, but from production lot to production lot. These variations may be significant only at maximum loads or when absolute accuracy is required. Nevertheless, when using a new lot of powder for an established load, always reduce your charge and work up to the previously established load. Some reloaders purchase powders in several-pound lots in order to minimize loading differences.

Bullets

Bullets come in a variety of sizes, weights, shapes and construction. All these variations give reloaders a wide choice for their specific use. Also, these differences have an impact on a bullet's function. The following discussion describes these differences and how each can affect your choice.



SIX HORNADY JACKETED BULLETS

A is the thin jacketed super explosive bullet; B is a standard jacketed bullet; C is a hollow point bullet; D is a hunting bullet as revealed by the cannelure and interlock ring; E and F are both full metal jacketed bullets. E duplicates a military design. F has a thicker jacket allowing for deep penetration on dangerous game.

Size or Diameter

Hornady Manufacturing offers bullets in a variety of standard diameters which match the groove diameter of a gun barrel. For instance, the barrel of a 30-06 has a bore diameter of .300", and a groove diameter of .308" (see the illustrated glossary for diagrams). Accordingly, appropriate Hornady 30 caliber bullets are .308" in diameter. If bullets are much larger than .308", pressures will rise above acceptable limits and accuracy diminish. In the worst case, the bullet could jam in the barrel and cause the firearm to burst. Less dangerously, if the bullet is just barely too large, the case neck will fit too snugly in the chamber neck area, again causing unacceptably high pressures. Difficult or impossible case extraction is a positive symptom of too high pressures. If the bullet is too small, adequate pressure may not develop, the bullet may not fully engage the rifling and accuracy will suffer.

Weight

Hornady bullets generally come in a range of weights, especially in the most popular calibers; there are both lead (unjacketed), usually meant for handguns or low velocity loads, and jacketed bullets. In either case, lead or a lead and antimony alloy makes up the majority of the bullet's weight.

In general, lighter bullets are used when higher velocities and deep penetration are not desired. Heavier bullets are used for deeper penetration, or when larger cartridge cases permit them.

The relationship of weight and diameter is expressed as a ratio called sectional density (S.D.) Sectional density is the number produced by dividing a bullet's weight in pounds by the square of its diameter in inches. Thus, in 30 caliber, a 150 grain bullet has an S.D. of .226 and a 180 grain bullet has an S.D. of .271. Within a caliber, heavier, and usually longer, bullets have a higher S.D. than lighter bullets.

It is interesting to compare the popular bullet weights and calibers. For example, 100 grain 6mm has an S.D. of .242, 130 grain 270 caliber has an S.D. of .242 and 165 30 caliber has an S.D. of .248. Some shooters select bullets by S.D. alone. While this factor is important, other factors such as construction and shape are also important.

Hornady offers a variety of bullet styles. Lead, Super Explosive jacketed, jacketed, but designed for varminting and medium game, match for target shooting, full metal jacketed for special applications and the well known Hornady Interlock for hunting. The cannelure on a bullet serves three purposes: it is an indicator of seating depth, on a hunting bullet it helps hold the jacket and core together, and when used in an automatic firearm, it prevents recoil from forcing the bullet too deep into the case of the following round.

Lead bullets are simply lead or lead alloy. These bullets are generally fired in handguns or firearms requiring lower velocity loads. Because of these lower velocities, bullet expansion is usually limited, although hollow point designs increase expansion. Lead bullets are cheaper than jacketed ones; their lower velocities reduce recoil and require shorter ranges, making them desirable for indoor ranges. All of these features contribute to their popularity for practice, and recreational shooting where many rounds are sure to be fired in a single session.

Super explosive (SX) jacketed bullets have a thinner than usual copper jacket, facilitating expansion on small targets such as prairie dogs, but they do not generally penetrate through larger targets such as coyotes. Furthermore, if the target is missed these bullets generally disintegrate on the ground, and therefore reduce the danger of ricochets. Some high velocity, rapid twist rate rifles can cause SX bullets to break up before reaching the target. As a general rule, rifling twist rates faster than one turn in ten inches, or velocities over 3,500 fps actually begin to tear the jacket apart before it exits the muzzle.

Varmint bullets are designed to be general purpose varmint, target shooting, plinking and in some cases medium game hunting bullets. These bullets have a thicker jacket than SX bullets, but still expand readily. They are especially accurate. Other bullets in this category are spire points (SP) and hollow points (HP). Spire points are just that, pointed and with a bit of lead exposed at the tip. Hollow points leave a portion of the jacket empty of the lead core which promotes rapid expansion and accuracy.

Target, or match, bullets are made to exacting standards of concentricity and accuracy. They also tend to be hollow points with an

aerodynamic design, therefore their higher ballistic coefficients. These bullets, in order to maintain accuracy suitable for competitive shooting, undergo extensive testing and evaluation. Although match bullets have been used successfully by some shooters for varmint and game hunting, they are not recommended for hunting.

Full metal jacket (FMJ) bullets originated for two different but similar functions. They are designed not to expand in general, but to penetrate deeply. Several pointed bullets such as the .224, 55 grain FMJ BT (boat tail), or the .308, 150 grain FMJ BT duplicate military bullets. Others, such as the 6mm, 80 FMJ are used most often by fur hunters who desire to minimize pelt damage. The 500 grain .458 bullet, on the other hand, is designed for hunting the largest, most dangerous game. It will penetrate tough hides and continue into vital organs without deforming or mushrooming. Full metal jacket bullets are specifically designed to work when penetration without expansion is needed.

Hornady bullets intended for hunting all have the Interlock ring. This original Hornady design locks the core and jacket together and allows the bullet to retain more weight and penetrate deeply as it expands. Bullets meant to be used in single shot pistols also have the Interlock, reflecting the popularity of high power pistols for hunting. Many shooters successfully use these bullets for varminting, target shooting and practice. Since hunting bullet designs include the most popular calibers and weights produced, they make an excellent general purpose load.

Clearly, bullet selection is a matter of intended use and personal preference.

If you are a varmint hunter, you may want a light hollow point bullet or a very thin jacketed spire point such as the Hornady SX.

Target shooters generally select the match grade Hornady bullets. These bullets are extremely accurate, and generally they have a very high ballistic coefficient, consequently a very flat trajectory. A high BC minimizes the effects of cross winds and, of course, reduces the bullet drop.

Silhouette shooters have a special need. They must not only hit the target, but knock it over as well. They want an accurate bullet with good momentum at the point of impact. Momentum, as a number, is computed by multiplying the mass of the bullet times its velocity. Therefore, both bullet mass, (essentially, its weight) and terminal velocity (a function of initial velocity, ballistic coefficient and distance) are both very important. In short, the more bullet momentum, the better the chance of knocking over the target. An excellent analysis of silhouette physics can be found in Williams C. Davis, Jr.'s' article in the January 1980 issue of *The American Rifleman*. Reprints are also available from Hornady Manufacturing.

Hunters though, may have the toughest choice as there are so many appropriate bullets. For example, let us look at the 30-06 for hunting whitetail deer. Many hunters feel the 150 grain bullet is best as it expands well and penetrates adequately. Other hunters feel the 165 grain

bullet is best, as it also offers good expansion but more penetration. Some hunters find the round nose design more effective, while others think the spire point has an advantage due to its higher down range energy and flatter trajectory. A few hunters like the rapid expansion of the 130 grain spire point, while some prefer the 180 grain bullet for its superb penetrating ability.

As the situation changes, so does the choice of bullets. For instance, if we stick with the 30-06 but change the game to elk, most hunters prefer the 180 grain bullet, some the 220, some the 165, and none the 130 grain.

The choice really depends on your situation and your beliefs. We, at Hornady, feel that almost all hunters will be satisfied with Hornady Interlock bullets. These bullets have a thinner jacket towards the point, a thicker jacket towards the heel and an interlock ring to hold the core and jacket together. This allows the bullet to expand, yet penetrate well.

Some hunters of large dangerous game or of fur-bearing animals opt for full metal jacket bullets. These bullets are known for their ability to resist deformation, and to penetrate deeply, necessary for the largest game animals. Hunters of fur-bearing animals select these bullets (perhaps the 6mm, 80 gr. FMJ) to reduce pelt damage. However, if these smaller bullets are destabilized, for instance by hitting bone, they can tumble and leave an undesirably large exit hole.

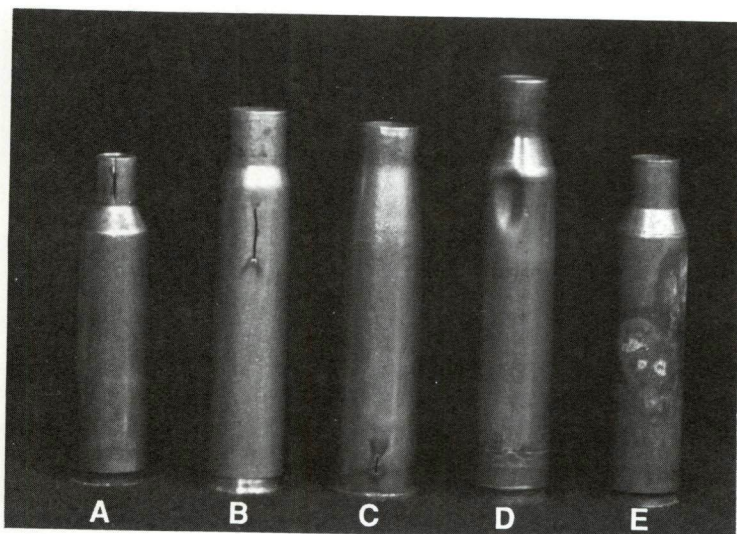
RELOADING: STEP BY STEP

There are a number of simple basic steps to reloading. Please read and follow these procedures carefully. You will find reloading to be a safe, simple process that moves along easily.

I. Case Inspection

The first step is case inspection. Brass cases are the most common cases available. Although aluminum and steel cases may be encountered, they should not be reloaded. Brass cases need to be inspected for flaws or imperfections that developed during manufacturing or firing. The most common flaws are cracks or splits in the brass.

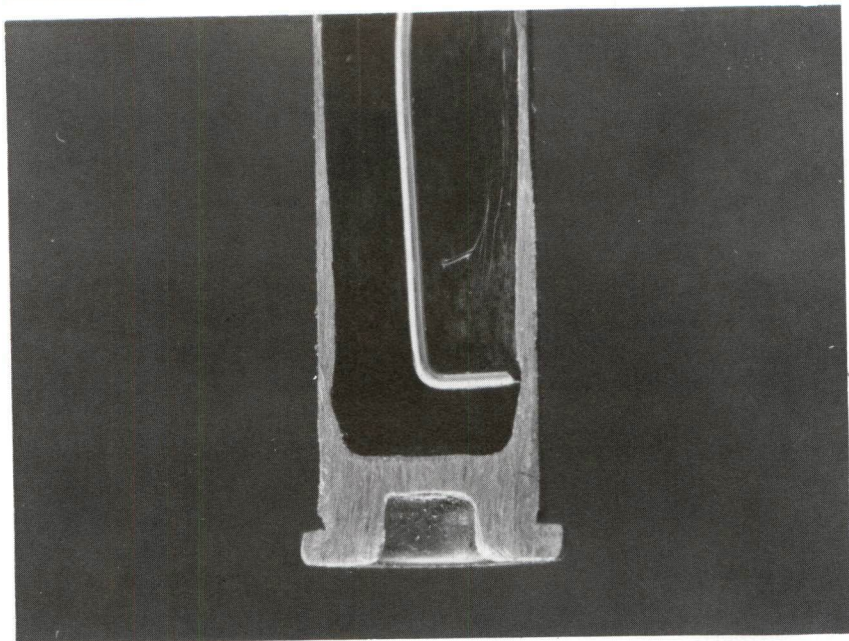
The illustrations below are of several of these defects.



Common and dangerous case defects include: (A) a split neck, (B) a split body in the shoulder area, (C) a split body in the head area, (D) an oil dent in the shoulder and a partial case head separation in front of the extractor groove and (E) a corroded case. All of these cases and cases suspected of having these conditions should be discarded. Using cases with such defects is very dangerous and could result in damage and injury.

Cases with these defects should be discarded.

Occasionally, usually due to excessive headspace problems, cases develop case head separations. This is a dangerous condition, and cases with head separation should be thrown out at once. The picture below is that of a cartridge case cut in half, in which you can see the separation line. Often it is difficult to detect case head separation from the outside. A simple device, made from a straightened paper clip with a sharpened hook on the end, can be used to check the inside of the case for signs of separation. If you are unsure of the condition of your cases, inspect them for flaws and wear.



One way to detect case head separation is to use a bent paper clip with a sharpened point. This "feeler" can be inserted for easy detection of the groove that results in a stretched case.

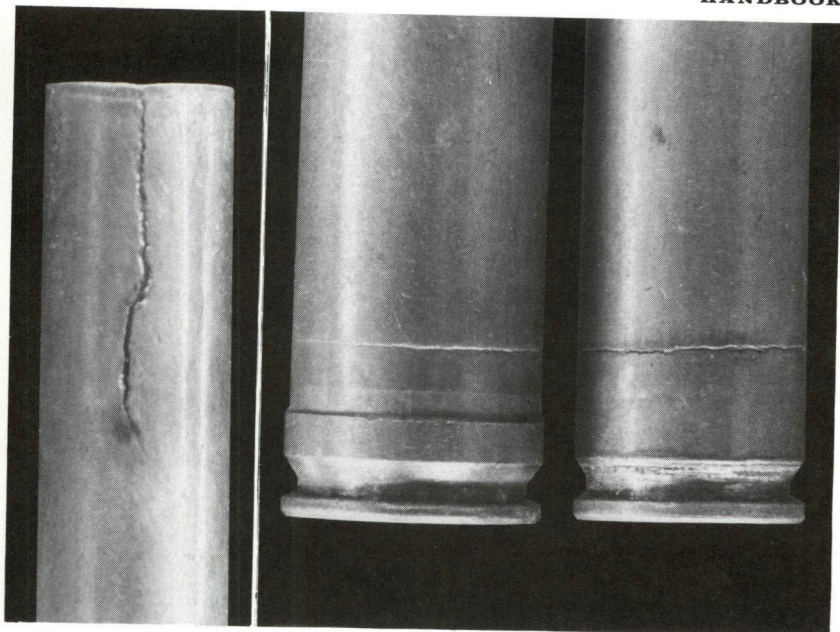
Cases also develop dents for various reasons. Dented mouths can be straightened by using a tapered punch or even a small screwdriver. Small dents on the case body wall are acceptable. Severe dents on the shoulder can be a problem as gases can by-pass the shoulder towards the breech or crack the case. Cases with severe dents should probably be discarded.

Cartridge cases occasionally become too long, generally due to stretching from repeated firing. Cases should be checked for length with a caliper and trimmed to a standard length to prevent other problems, including possible increased pressures.

Sometimes the brass in the neck area is too thick. This can cause high pressures and chambering difficulty as the bullet neck diameter can be too tight in the chamber. A simple check, although not fool proof, is to see if a bullet of the proper caliber easily slides into a fired case. Cases with too thick neck walls either should be discarded, or reamed or turned with special neck turning tools.

Some cases have uneven neck thickness. The brass on one side is simply thicker than on the rest of the case neck. While not dangerous, this flaw frequently causes inaccuracy, as the bullet, when chambered, will not be properly aligned with the bore. A case with this flaw can be corrected with neck turning tools.

All cartridge cases tarnish, but some get corroded. This corrosion appears as green or dark reddish-brown rough areas on the brass and indicates that the case has been exposed to a harsh environment.



The case on the left is split, probably a result of brittle brass, while the two cases on the right are separating in the head area because of headspace problems.

While minor amounts of corrosion can be removed with fine steel wool, it is impossible to tell whether the case has been weakened too much by chemical changes in the brass. Corroded cases should be thrown out.

The brass cartridge case is the most costly of the four ammunition components, but it is cheap compared to the repair of firearms and body parts. Get rid of any questionable cases; they are not worth the risk.

II. Case Preparation

There are two basic case designs: bottleneck and straight wall. The bottleneck case has a smaller neck than the body and is most commonly a rifle cartridge; straight walled are just that, and are most often pistol cases.

- a) Cartridge cases can be prepared for reloading quite easily. Many reloaders prefer to clean and polish their cases in a weak acid solution such as vinegar, or a 1% citric acid solution, while others clean and polish in tumblers or vibrators filled with crushed walnut shells, ground corn cobs or other commercially available media. Particularly industrious, and patient, loaders simply use very fine steel wool. Each method produces attractive cases, but polishing is not essential unless the cases are extremely dirty.

- b) Cases must be lubricated before resizing. If there is insufficient, or no lubrication, the cartridge case can stick in the resizing die (see removal of stuck cases). Too much lubrication can cause minor denting of the case. With a little practice you will be able to judge the amount of lubrication necessary.

There are several methods of lubricating cases. One of the easiest is to use Hornady "One Shot" case lubricant spray. In our lab we lay the cases on their sides, on a lube pad or fairly clean cloth, spray lightly, roll them 180 degrees to their opposite sides, and spray again. Let them sit for a moment or two while the lube spreads and dries. If you are careful to spray at a slight angle, a dab of lubricant should get into the case mouth, which will help the expander ball exit the case during resizing. "One Shot" should be used in only well ventilated areas so the solvent fumes can dissipate.

Older, more familiar products are liquid resizing lubricants or Hornady Unique Case Lube. Simply place a little lubricant on the finger tips and spread it on the cases. A cotton swab with a little graphite or dry lubricant can be used to lubricate the inside of the case neck. Hornady does not recommend the use of oil based lubes for the inside of case mouths, as oils are contaminants of powder. Hornady's elliptical expanding ball lessens the need for case neck lubrication and minimizes case neck stretching.

Probably the most common method is to use a felt lubricating pad, such as the Hornady case lube pad and loading tray. Lubricant is placed on the pad, and cases are rolled over it, thus rubbing their sides with the lube. A cotton swab or a bore brush with a bit of dry lubricant is then run into the case necks to coat them lightly with lube.

For some straight-walled hand gun cartridge cases, Hornady offers titanium nitride resizing dies which do not require lubricated cases. For instance, .357 magnum cases can be resized directly in the .38/.356 magnum/.357 maximum titanium nitride dies without any lubricant. Eliminating the case lube step simplifies and speeds up reloading, easily justifying the moderately higher cost of these dies.

III. Case Resizing

Resizing returns the fired brass cartridge to its original dimensions. This is done by pushing the lubricated case into a precisely machined die. The dimensions of the interior of the die are slightly smaller than the chamber, therefore, the resized case will fit easily into the firearm. During resizing, the old primer is removed by the decapping pin on the expander spindle.

There are three basic methods of resizing: full length resizing, partial resizing and neck sizing only. The method you use depends on your firearm and your requirements.

Full length resizing is simple. Simply raise the ram, with the appropriate shell holder, to its highest point and screw the full length resizing die into the top of the reloading press frame until it just

touches the shell head holder; lower the ram, insert a lubricated case into the shell holder, raise the ram to its fullest; lower the ram to extract the fully resized case. The case has been forced back to its pre-fired dimension. As you lower the ram you should notice some slight resistance while the expander ball is pulled out of the case neck. The elliptical shape of Hornady expander balls helps them enter and exit the cases, and reduces the need for case trimming.

Some shooters feel that partial resizing or neck sizing is an advantage. In some situations it may aid in accuracy as the case fits the chamber better. Others feel that case life is increased as there is less working of the metal case.

As partially resized cases may require more effort to chamber, they should probably be left to target shooting or varmint hunting. In partial resizing, the resizing die can be backed off from the shell holder in its topmost position. You must experiment a bit by trying various degrees of resized cases in your firearm. You should resize enough that the cases will enter the chamber with only slight effort.

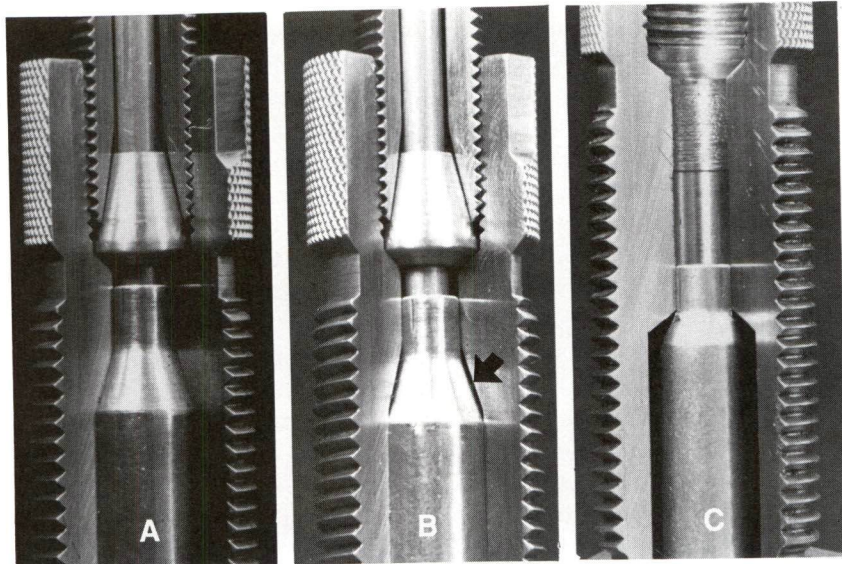
Some reloaders want to resize only the neck of the case, leaving the remainder of the case at the dimensions it reached when fired. Since brass is somewhat springy, it is usually slightly smaller than the chamber. When fired, the case expands to fill the chamber, and as the pressure subsides, and the case cools down, the brass shrinks back slightly allowing extraction.

Any resizing process also pushes out the old primer; this is called depriming. NEVER attempt to deprime unfired primers. The deprime pin may cause the primer to detonate. If you have primed cases and you want to remove the live primer, take a firearm of the correct caliber, go to a safe area, chamber the case and discharge the firearm in a safe manner.

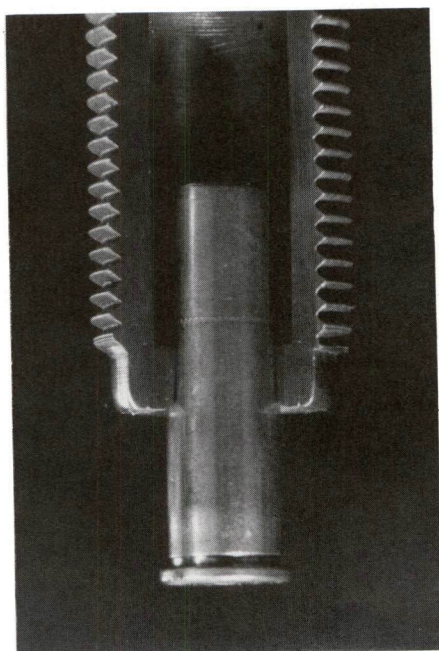
Resizing straight-walled cases, such as .357 magnum or .444 Marlin differs only slightly from bottle neck cases.

For standard Hornady dies, lubrication, as mentioned previously, is necessary. Hornady's "one shot" case lube, Unique Lube, or liquid case lube on a lube pad are reliable lubricants. Other examples of straight-walled cases include the 45-70 Government, 458 Winchester magnum or 30 M1 carbine.

For straight-walled pistol cartridges, such as the 9mm Luger, 44 Remington magnum or the 45 Colt, and many others, titanium nitride sizing dies and die sets are available. These dies have a special gold colored ring at the mouth of the die. This ring is coated with titanium nitride which is extremely hard and slippery and eliminates the need for lubrication. Removing the need for lubrication simplifies, and speeds up reloading. Many reloaders feel the slightly higher price difference of the titanium nitride dies is money well spent.



Photograph A is a cartridge being full length resized in a Hornady New Dimension Die. B shows the same die adjusted for partial resizing. Note that the shoulder of the case in Photograph B is not touching the die as indicated by the gap (arrow). The die in Photograph C is a Hornady New Dimension Neck Sizing Die which only resizes the neck of the case. Note the space between the case and the die.



This straight-walled case is partially resized in a Hornady Titanium Nitride Die.

With Hornady "New Dimension" dies, the resizing process simultaneously deprime the case. We repeat, NEVER attempt to deprime unfired primers.

Once the old primer is removed, it is best to clear the ash and residue from the primer pocket. A simple twist of the Hornady primer pocket cleaner will leave the pocket clean and allow the new primer to seat properly and consistently.

After sizing, straight-walled cases need a step that bottle neck cases do not require. The mouth of the straight-walled case needs to be expanded, "belled", or flared outward slightly to help guide the bullet for seating. Without flaring the mouth outward, bullets can catch on the edge of the case and crush it during seating. This flaring is performed using the New Dimension Case Expander Die. It is adjusted by placing a sized, unprimed case in the shell holder and raising the ram to its full height. Screw the expander die into the press until the expander touches the mouth of the case. Lower the ram, turn the expander die down just a fraction of a turn, raise the ram fully, lower the ram, and inspect the mouth of the case. Continue adjusting the die downward until the case mouth is flared slightly. It should be flared enough to help the bullet seat properly. Too much flare increases the frequency of split cases, and consequently case life; too little flare, and the bullet will not seat easily.



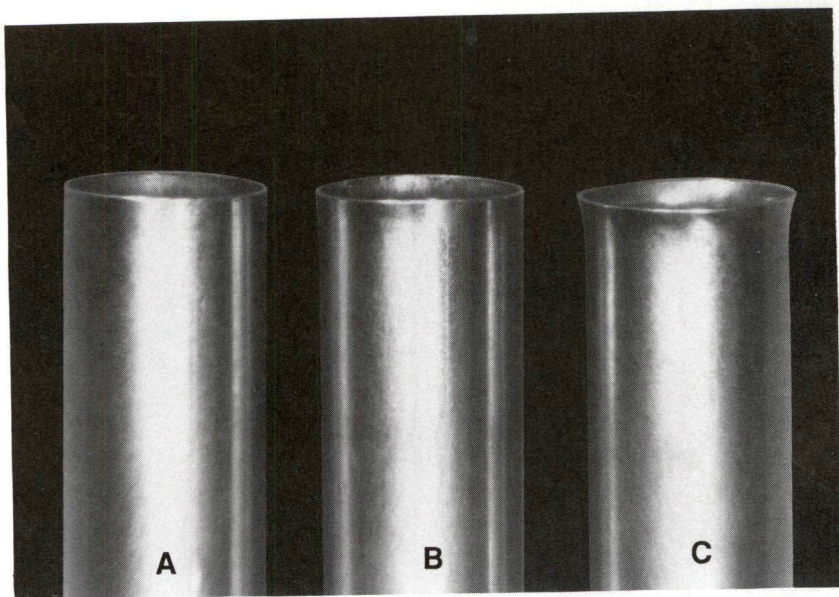
The primer pocket on the left still retains primer ash, while the case on the right has been cleaned.

IV. Priming

If you have not been wearing safety glasses, now is the time to put them on.

Once the kind of primer is selected, priming is straight forward and simple. See "Selecting a Primer" for information on that topic.

There are two important details about priming that should be kept in mind. One is that excessive moisture, chemicals, grease or oils can contaminate the priming compound ruining the primer. Clean hands and equipment are in order. The second issue is proper seating. Primers must not stick out above the head of the case. Such a condition could lead to a premature discharge, for example when closing the bolt, and cause serious injury. Careless or improper handloading procedures and practices can cause dangerous conditions which can result in significant damage to workshops, reloading equipment and people. Primers must be seated to contact the bottom of the primer pocket, thus insuring consistent ignition. If the primer is not touching the bottom, part of the movement of the firing pin is wasted pushing the primer all the way to the bottom, instead of crushing the explosive compound. Primers at different seating depths are apt to give varying ignition and result in erratic accuracy.



Belling (or flaring) straight-walled cases is necessary for bullet seating. Case A is not belled. B is properly belled; C is excessively belled which may cause premature case failure.

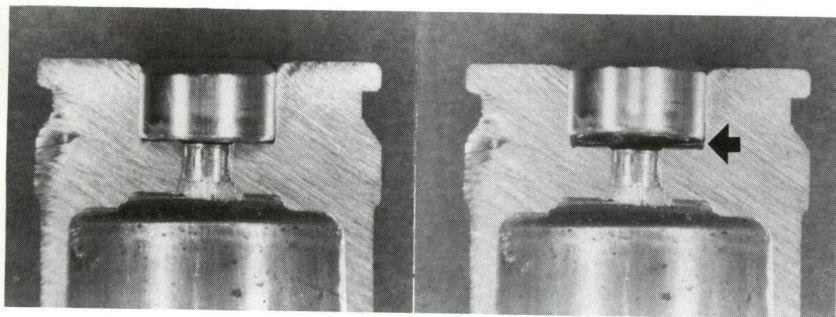
A cartridge to be primed should have any traces of oil based lubricant removed; a paper towel works fine. Hornady One Shot case lubrication is an exception to this rule as its non-petroleum based formula is specifically designed for lubing cases.

The cartridge case is placed in the shell head holder and the ram raised. With clean hands, place the primer in the priming arm with the open end up. The ram is then lowered, and the priming arm pivots into its proper priming position. Lowering it further will cause the primer to be pushed into the primer pocket. You can feel the primer touch the bottom of the primer pocket if you pay attention. This feel is important since it is your cue to a completely seated primer. You want to seat each and every primer just this way as it will lead to more consistent ammunition and accurate reloads.

V. Powder Charging

Dropping powder in the primed, resized case is the next step. Assuming you have already selected a specific kind of powder, begin with the lowest load in the Hornady Handbook and gradually increase the powder charge until you have established a load that is suitable for your firearm. See "Selecting a Powder" and "Developing a Load" for a more detailed description of those subjects.

There are several ways to get to a certain powder charge. A good scale is essential to safe cartridge reloading. One could dribble powder by the teaspoon into the weighing pan until the desired weight is reached, but most reloaders prefer a powder measure. The Hornady



The case on the left has a primer seated to the bottom of the pocket while the primer on the right has a space (indicated by the arrow) between the primer and the bottom of the pocket. This space can cause inconsistent ignition as the firing pin will push the primer forward expending some energy unnecessarily.

Deluxe Powder Measure is an excellent and extremely useful choice since it has a micrometer dial that lets you set a precise charge, greatly speeding up the reloading process. A powder scale is still required to verify the powder charge. In practice, one should measure every tenth charge to make sure the powder charge setting is unchanged. Some reloaders prefer to weigh each charge, especially if they are working on maximum loads. The powder measure can be set a fraction of a grain below the desired charge and the Hornady powder trickler filled with identical powder used to add a few kernels of powder to the weighing pan of your scale until the desired weight is reached.

Another option for small cases, such as pistol calibers, is the Hornady Pistol Powder Measure which offers over twenty different interchangeable powder bushings.

Bushings offer a tremendous variety of powder charges for almost all popular pistol cartridges. With either powder measure, powder charges can be dispensed easily, rapidly, and accurately, thus cutting the time required for reloading, and greatly reducing the opportunity for error.

Once the charge is measured and weighed, simply place a powder funnel over the case mouth and empty the powder into the funnel. If you are charging directly from a powder measure, hold the cartridge tightly to the mouth of the powder drop tube, and catch the powder as the drum empties. Place primed charged cases in a reloading tray, and before bullet seating, visually check the powder levels of all the cartridges. It is easy to spot empty cases or ones that have been double charged.

Some loads nearly fill the case, but are completely safe. By gently tapping the case, most powders will settle and provide slightly more room.

VI. Bullet Seating

Seating the bullet is next. Assuming that you already selected a bullet (see *Selecting a Bullet*), now it is time to place the bullet in the cartridge case.

You must decide if the bullet is to be crimped or not. Crimping gently pushes the cartridge case mouth into the bullet cannelure. Crimping is necessary in some cartridge rifle combinations, such as the 30-30 Winchester, or in a tubular magazine firearm; optional in others, such as a bolt action, and unnecessary in many others such as a Ruger #1 single shot rifle. Crimping is necessary when the cartridge is subject to battering from recoil. Such battering could allow the bullet to move deeper into the case, resulting in unexpected high pressure.

If the cartridge is to be crimped, place a sized, unprimed, uncharged case, of the proper length, in the shell holder, and raise the ram to its highest point. The bullet seating die is screwed into the press until the die meets some resistance, a signal that the crimping ring is hitting the case mouth. Turn the seating die back out of the press approximately one-half turn, screw the bullet seater adjustment screw out until you see the rubber "o"-ring. With the bullet seater screw adjusted higher than necessary, you are able to adjust the bullet seater

down, until the proper seating depth is reached. Place a primed, charged case in the shell holder, place the appropriate bullet above the case mouth and slowly raise the ram. The bullet should be barely seated in the case. Adjust the bullet seater screw downwards, raise the ram and check the seating depth. Adjust the bullet seater screw bit by bit until the case mouth is even with the cannelure. Now, turn the bullet seater screw back out by several turns. Slowly turn the entire seater die deeper into the press in small increments, (one-sixteenth to one-eighth turns). While making each adjustment, raise the ram to its fullest, and lower it to inspect the crimp. Once you have obtained the desired amount of crimp, raise the cartridge fully, turn the die body lock ring down until it touches the press and tighten the lock ring. With the ram still in its raised position, turn the bullet seater adjustment screw until it firmly contacts the bullet. You have adjusted the bullet seating die for that bullet in that cartridge. If cases are different lengths, they will have different amounts of crimp. Uniform case length is required if crimped cartridges are to be consistent.

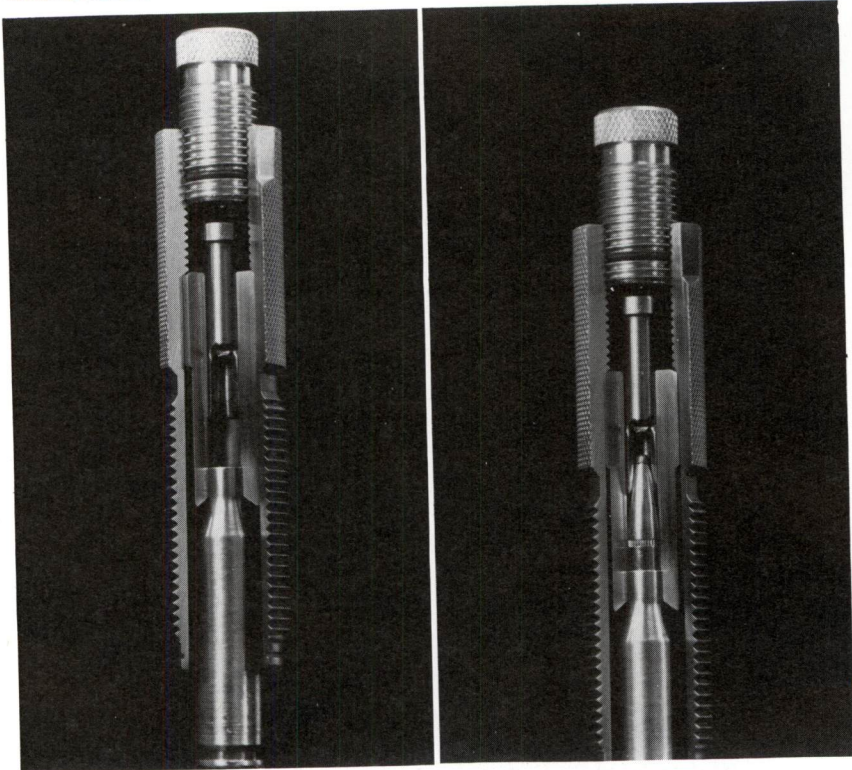
Certain straight-walled cartridges such as the 45 ACP, 9mm, 10mm and 30 carbine headspace on the case mouth. If the case mouth is rolled into a cannelure, it will not headspace correctly in the chamber. This can lead to inaccuracy, malfunctioning, and possible damage or injury. Hornady offers taper crimp dies for these cartridges. Instead of rolling the case mouth into a cannelure, the taper crimp die gently tapers the case mouth around the bullet. It removes any flared portion of the case mouth, and reduces the diameter of the case mouth slightly. However the case mouth will still headspace evenly and consistently.

The taper crimp die is easily adjusted. Once the bullet is seated to the proper depth, replace the bullet seating die with the taper crimp die. Place a resized, primed, charged case into the shell holder, place a bullet into the case mouth and raise the ram to its fullest. The taper crimp die is screwed into the reloading press until resistance is felt. Lower the ram slightly, screw the taper crimp die in slightly, about one-eighth turn, raise the ram fully, lower it and inspect the crimp. If more crimp is desired, again screw the taper crimp die in slightly, raise the ram fully, lower the ram and inspect the case. Repeat these steps until the desired taper crimp is reached. When it is reached, raise the ram, with the taper crimped case still in the shell holder, to its fullest, and set the lock ring. The taper crimp die is set to crimp the remainder of your cartridges.

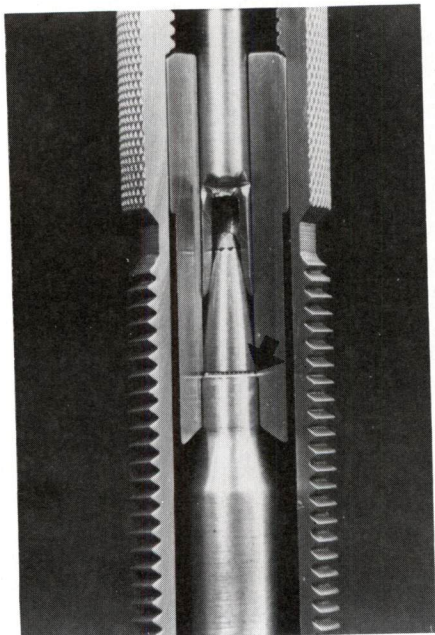
Applying too much crimping pressure can cause the case to buckle and bulge in one of several places, most commonly, just below the case mouth and at the edge of the shoulder.

Unfortunately, bulged cases will not fit the chamber and there is no easy solution to remedy the situation. It is probably best to pull the bullet (see "Bullet Pulling"). Save the bullet and powder (only if the powder type is known for certain) and discard the primed case.

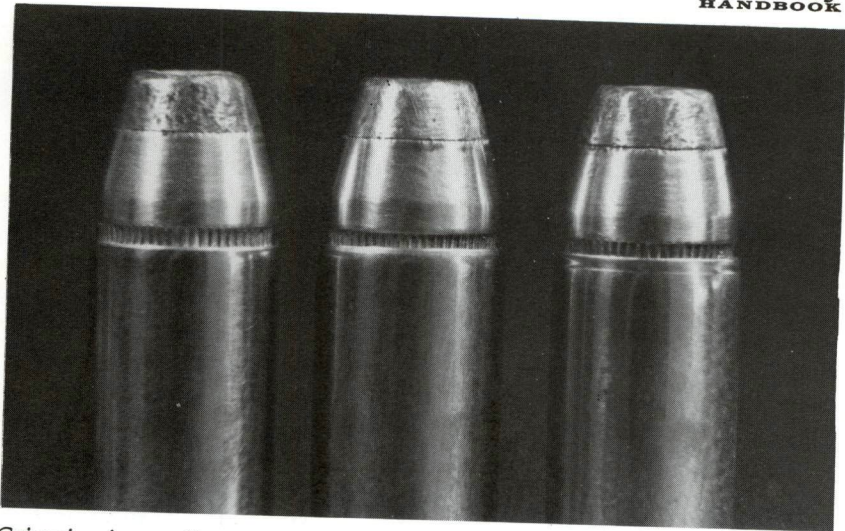
If the bullet is not to be crimped, use the same procedure for adjusting your dies, except leave the seater die turned out approximately



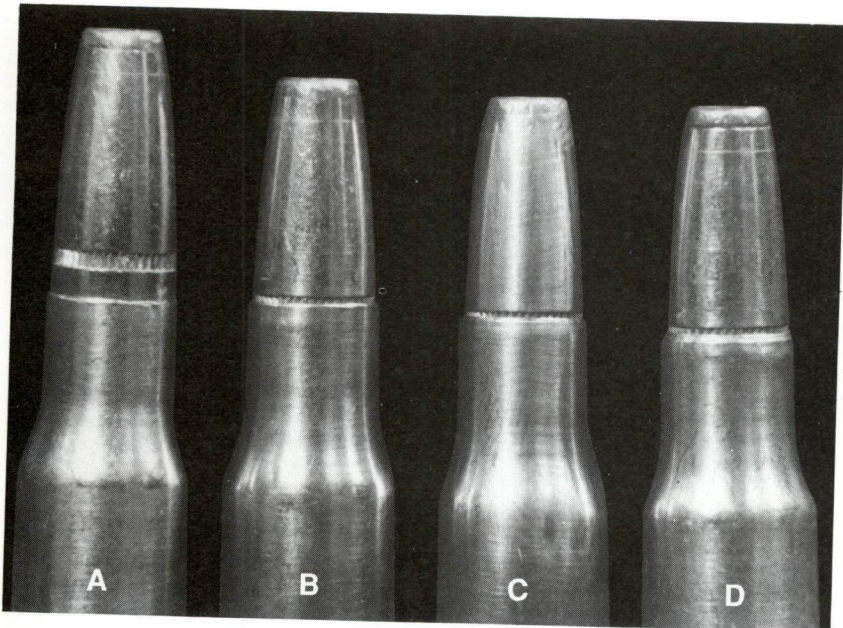
In the photograph on the left is an empty case in a Hornady New Dimension Die with the seating stem and the alignment sleeve. On the right is the same die with a bullet partially seated. During the seating process, the seating collet holds the bullet in alignment with the case.



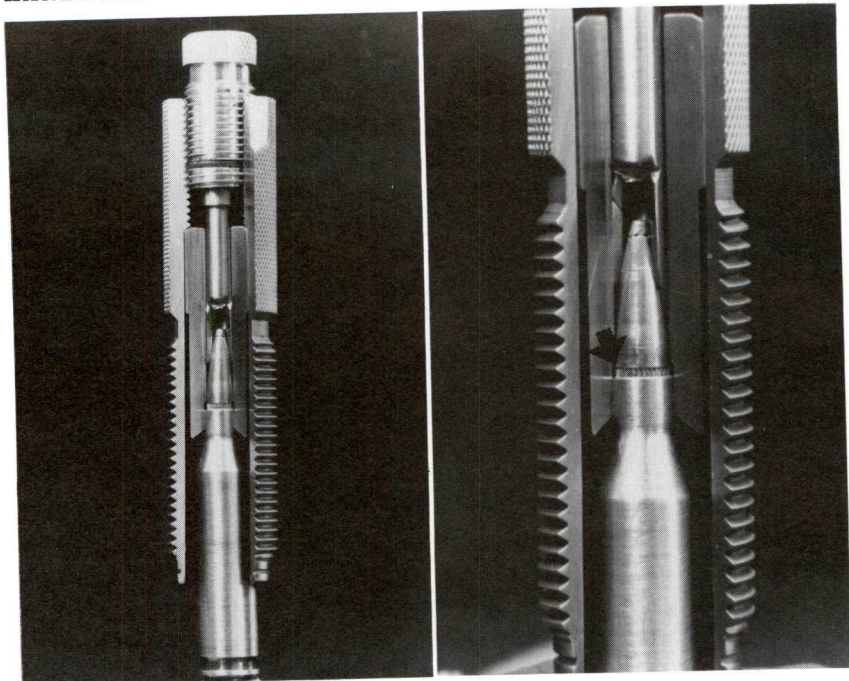
Pictured is a Hornady New Dimension Bullet Seating Die adjusted to crimp the case mouth into the bullet cannelure. Note the crimp shoulder at the same position as the cannelure (arrow).



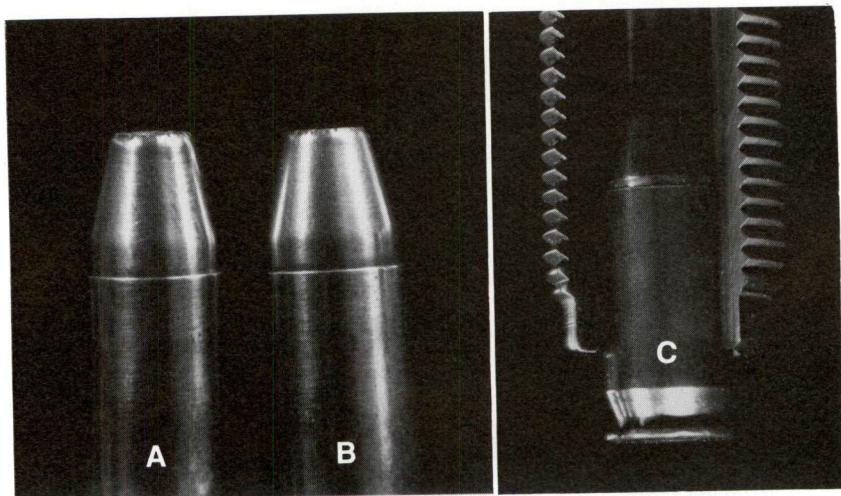
Crimping is usually necessary on straight-walled cases such as the revolver cartridges pictured here. The crimp helps in powder ignition and prevents bullet movement during recoil. The cartridge on the left has no crimp, the center cartridge is properly crimped, while the cartridge on the right has too much crimp.



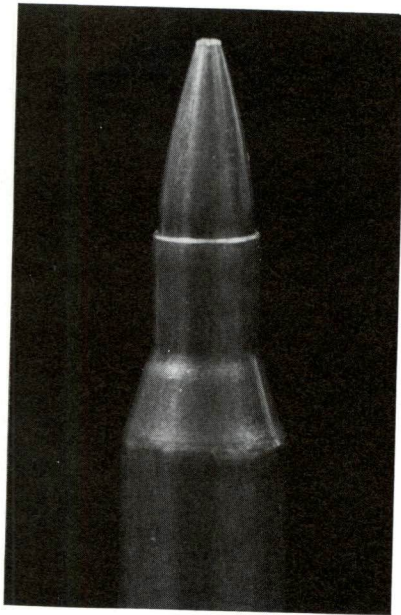
Rifle cartridges do not always require a crimp. Cartridge A is intended for use in a single shot firearm. Overall length and the possibility of bullet movement are not of concern. Cartridges B-D show bullets seated to function in a lever action rifle. B is uncrimped, allowing possible bullet movement during recoil. This could result in unexpected or dangerous pressure. C is properly crimped, while D is overcrimped which may bulge the case resulting in chambering problems.



Pictured on the left is a bullet to be seated in a Hornady New Dimension Bullet Seating Die. The die is adjusted so as not to crimp the case mouth into the bullet cannelure. Note the crimp shoulder is above the case mouth (arrow).



Cartridge A is not taper crimped. Cartridge B is taper crimped, allowing for easier and more reliable chambering of the cartridge. Cartridge C is a round in a Hornady Taper Crimp Die.



An improperly adjusted bullet seating die can bulge a case, resulting in a round that will not fit the chamber.

one-half to one turn above the point where the crimp ring touches the case mouth.

Some shooters, who load several different bullets in one caliber, use unprimed cases with a bullet seated to the appropriate length as a gauge for setting up their bullet seating die. In this case, the bullet seating die is screwed into the frame, the bullet seating screw is turned out, the unprimed case, with bullet at the proper length, is placed in the shell holder, the ram raised to its highest point and the bullet seater screw is turned down until it touches the bullet. The "dummy" round is removed and seating bullets can proceed as normal. Use of a dummy round as described can save considerable time.

Although you now have reloaded cartridges, there are a few small details that are extremely useful. One is recording the reloading information; write down all of the specifics you used to produce this ammunition. You might include the following items: the date of the reloading, method of sizing (full length, neck only), brand and type of primer (for example, Remington, #9 $\frac{1}{2}$, large rifle, magnum) powder type and charge, brand of cartridge case, bullet brand, style and weight, and bullet seating depth, or loaded cartridge-overall-length, and whether crimped or not.

Many reloaders frequently wish to duplicate a certain reload, but cannot recall exactly what components were used. Some reloaders keep a separate notebook for such information, others use the

gummed labels found in each box of Hornady bullets, or the blank pages at the rear of this manual, and a few use all three. Writing down the reloading data is a simple way of saving some back tracking at a later date.

After firing the reloaded cartridge, you should inspect the fired case to look for indications of high pressure etc. as listed in "Developing a Load."

IS RELOADING SAFE?

In short, yes, very safe!

Like many things, such as operating a car, there are certain common sense practices that need to be followed. Following these procedures, you will have little to concern yourself. Some of these safety steps include:

1. **FOLLOW RELOADING DATA AND UNDERSTAND THE PROCESS.** Use only the powders and components listed.
2. **BE FULLY ALERT.** Never reload ammunition when tired or under the influence of medications or alcohol.
3. **KEEP RELOADING COMPONENTS, CARTRIDGES, AND FIREARMS OUT OF THE REACH OF CHILDREN.**
4. **NO SMOKING, OPEN FLAMES, OR EXTREME HEAT SOURCES NEAR POWDER OR PRIMERS.** Obviously, such heat can cause these substances to spontaneously ignite, explode, or deteriorate.
5. **EXAMINE THE CASES TO BE RELOADED.** Discard any case with cracks or enlarged primer pockets or any other condition that might cause it to be suspect.
6. **ALWAYS WEAR PROTECTIVE EYE WEAR** such as safety glasses when reloading or shooting. Freak accidents do occur and the human eye is delicate and irreplaceable.
7. **HANDLE PRIMERS CAREFULLY.** Primers contain a small amount of explosive substance that, when crushed by the firing pin, ignite the powder charge in the cartridge case. Primers can discharge if crushed, physically shocked or overheated. Excessive moisture, some chemicals and oils or grease can affect the priming compound and cause problems. Never decap live primers. Discharge the primers in the correct firearm and deprime normally.
8. **START WITH THE LOWEST LOADS AND WORK UP TO A MAXIMUM LOAD** as variations in powder, primers, brass, chamber dimension, etc. can form a potentially dangerous condition with damage and serious injury as a result.
9. **NEVER USE UNLABELED COMPONENTS.** Always make sure of the powder and primers you are using, and discard safely.
10. **NEVER MIX TWO DIFFERENT POWDERS OR USE TWO POWDERS IN A CASE** (a duplex load). Such mixtures can produce unpredictable results and extremely high pressure.
11. **NEVER REPACKAGE POWDER OR PRIMERS.** Leave them in the original container for ease of identification and proper storage.
12. **IF YOU CHANGE ANY OF THE COMPONENTS**, such as a different primer, reduce your powder charge initially and work up a new load equal to your previous load. Component changes sometimes cause changes in pressure and accuracy.
13. **NEVER USE REDUCED LOADS OF SLOW BURNING POWDERS** as they can give extremely high and unpredictable results.

14. DO NOT EAT FOOD OR DRINK LIQUIDS WHILE RELOADING as ingestion of some components or dust from these components can cause injury.
15. CLEAN UP SPILLED POWDER WITH A BROOM or any other non-sparking device. Do not use an electric vacuum cleaner as there is a remote chance that a spark could ignite the powder.
16. MAKE SURE THE FIREARM IS IN GOOD CONDITION, AND DESIGNED FOR THE SPECIFIC RELOADED CARTRIDGE.

As you read the list, you'll agree that these are common sense, and following them should not be difficult.

PRESSURE SIGNS

Pressure is the force that pushes the bullet down the barrel. The burning gases provide this pressure.

Firearms and cartridges have a maximum allowable pressure. This maximum varies greatly, depending on the design of the firearm and the cartridge. It may range from 15,000 pounds per square inch (psi) for an older cartridge such as the .45-70 Government to 60,000 psi for the .257 Weatherby Magnum. Although most people are concerned with maximum pressure too low pressure occasionally occurs. Symptoms of too low pressure include stuck bullets in the bore, backed out primers and sooty cases. If a bullet sticks in the barrel, lubricate the barrel and, using a long wooden dowel or rod, gently tap the bullet out. Never fire another cartridge behind a stuck bullet as serious damage and injury can occur. Fortunately, low pressure can usually be corrected by gradually increasing the powder charge.

Higher than normal pressures can also cause problems, even serious damage and injury. However, as a safe reloader, you have begun to load at the lowest load listed in the Hornady data and have been gradually working up your load. As you increase the charge, you increase the pressures in the chamber and increase the bullet's velocity. As the pressure increases, there will be noticeable signs of this increase.

If excessive, these signs include:

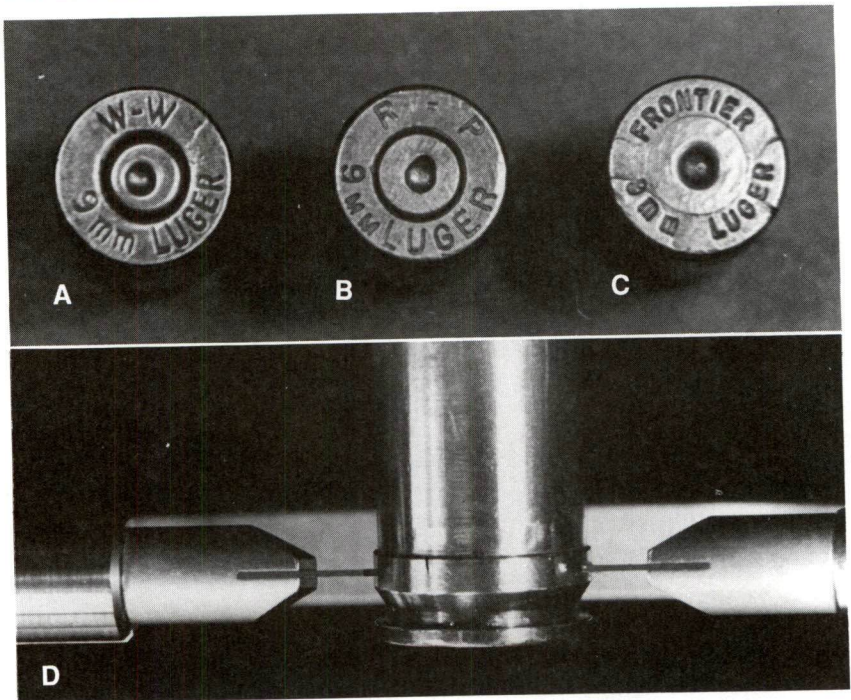
- 1) An increase in case head expansion as measured by a very accurate micrometer
- 2) Hard or sticky extraction from the chamber of the firearm.
- 3) Flattened primers (the rounded edges of the primer are now flattened, filling the gap between primer and case head)
- 4) Cratered primers (primer cup material flowing into the firing pin hold)
- 5) Ejector marks on the case head
- 6) Sooty gas leakage around the primer
- 7) Enlarged primer pockets, in the worst cases with the primer blown loose

If any of these signs show up, stop immediately and begin to look for the cause of these symptoms of high pressure. Some common causes and solutions are:

- 1) You are using too much powder (check your scales or powder setting, use less powder).
- 2) You changed components (i.e., different cases, different primer). Reduce your load and re-establish a new maximum.
- 3) You are using the wrong data (check your reloading data).
- 4) You are using the wrong powder (check your reloading data).

- 5) You are using a heavier bullet than called for in the data (check your reloading data)
- 6) Your cases are too long (trim cases)
- 7) A hot firearm due to hot weather or repeated firing (allow firearm to cool or re-establish a new load for hot weather)

Occasionally, some of these symptoms may have other causes. Rarely, cratered primers can be caused by a firing pin hole that is too large, or a weak firing pin spring. These problems can be handled by a good gunsmith. Excessive case expansion, hard extraction, and loose primer pockets are occasionally due to soft brass. These cases should be discarded.



Pressure signs can sometimes be accurately estimated by appearance and physical measurements. In A-C, fired 9mm cases show varying amounts of primer flattening due to chamber pressure. Cartridge A had normal pressure with the primer showing rounded edges. Cartridge B shows high pressure signs, with a flattened primer while cartridge C shows extremely high and dangerous pressure, experimentally produced in our laboratory, with an enlarged primer pocket.

The lower photograph shows a blade micrometer measuring the belt of a magnum case. Careful measurement of this dimension of new cases before and after firing reflects chamber pressure. Measurement of rimless cases just in front of the extractor groove or rimmed cases immediately in front of the rim will reveal similar results. When these results are compared to similar measurements on factory rounds, a reloader can approximate a safe upper pressure limit.

SPECIAL TIPS & TECHNIQUES

ACCURACY

One of the most common concerns of the reloader is finding an accurate load. Accuracy means different things to different shooters. You should average the group size of 2 or 3 five shot groups to establish the accuracy of your firearm. Unfortunately, accuracy is dependent on many factors besides the load. All of the following are critical to accuracy and any one can offset the others:

1. Barrel Quality
2. Barrel and Action Bedding
3. Bullet Quality
4. Trigger Quality
5. Load
6. Sight Quality

Of course, there are some assumptions to this list. We assume that the barrel is clean and the cartridge is one that is inherently accurate (some cartridges appear to be more accurate than others), the twist rate of the barrel will stabilize the bullet sufficiently, and that the shooter is proficient. If your firearm is not shooting well with your reloads, or any ammunition, start looking at simple, inexpensive solutions.

Begin by checking the following:

1. The barrel cleanliness

Rarely does a dirty barrel shoot as well as a clean barrel. There are two common causes of dirty barrels: metal fouling and powder residue. Metal fouling is caused by deposits of lead or copper gilding metal from the bullet. Once metal fouling begins, it causes even more bullet metal to be deposited, further reducing accuracy. Metal fouling and powder residue can be removed by using a variety of commercial solvents and brushes. In severe cases, a mild abrasive may be used, or reverse electrical plating might be necessary. After cleaning a barrel, leave it wet with solvent for 24 to 48 hours. If a clean patch is run through it after this soaking and shows greenish residue, metal fouling is still present. Black residue on the patch indicates powder remnants. Repeat the brushing and soaking until patches are clean. A barrel cannot be too clean.

2. The barrel temperature

Firing cartridges causes the barrel to heat up, especially in magnum calibers. Some barrels are sensitive to heat, and begin to spread subsequent shots farther apart. Try shooting one shot, and allowing the barrel to cool for several minutes before firing the next cartridge. Continue shooting, allowing the barrel to cool between shots. Some rifles show remarkable accuracy when fired from a cool barrel.

3. *The sights*

Occasionally the sights loosen, causing a firearm to appear inaccurate. Retighten as necessary; use one of the commercial mounting preparations if this is a recurring problem. Every now and then, a telescopic sight has internal problems, causing the firearm to shoot inaccurately. Substituting a telescopic sight of known performance will reveal if the scope in question has a problem or not. Also, scopes have a condition known as parallax that causes significant variations in point of impact. Check the instructions that came with the scope to correct for parallax.

4. *The barrel's twist rate*

This can be determined by pushing a tight brush or cleaning rod down the bore and noting how many inches it takes for a mark on the rod to revolve once. Using different weight or length bullets appropriate to the twist rate may help with stability. Longer bullets must be spun faster to stabilize them than shorter ones in the same caliber.

5. *The barrel bedding*

Many barrels shoot best when "free floating"; that is they do not touch the stock except directly in front of the action. Some barrels touch along one side or unevenly, which can be revealed by sliding a piece of paper under the barrel. Uneven bedding will cause the point of impact to shift as the barrel heats up, or from the vibration of the bullet passing down the barrel. Disassembly of the firearm and careful use of sandpaper can correct this problem. If rebedding or free floating is desired, unless you know what you are doing, check with a gunsmith before you attempt this work. Some barrels shoot best with some upward pressure on the barrel at the tip of the stock. Disassembly and insertion of temporary paper shims can indicate the usefulness of this technique.

6. *The action bedding*

If the action is being stressed by a poor fit to the stock, the firearm often will not shoot accurately. To test for this condition place your index finger at the barrel and forearm junction, and loosen the screws that hold the action in the stock with your other hand. If any movement is detected, there are probably action bedding problems. High spots should be removed to correct this problem. A good gunsmith can easily do this, as can you, using a commercial bedding kit. Unfortunately, some wooden stocks warp due to temperature and humidity, causing both barrel and action bedding problems. Some shooters have gone to plastic or fiberglass stocks that, once bedded properly, never change.

If these solutions don't help, it may be time to look at some other possibilities which occur infrequently, but do happen. These include an off center chamber, an out of square bolt face, a barrel out of alignment with receiver or a bad barrel. These problems all have a single

solution: Find a good gunsmith and get help.

However, if your firearm is reasonably accurate with factory ammunition, or your reloads, now is the time to work up an accurate load. There is a certain amount of trial and error required to find a load that meets your requirements. You can change components and loads until you reach your goal. You should consider the following solutions:

1. *Cases — Uniformity is essential to accuracy.*

- A. Use cases from the same manufacturer and preferably from the same production lot.
- B. Make sure the cases are trimmed to the same length, and that they are slightly shorter than maximum.
- C. Some shooters weigh their cases. Select cases of the same weight (or as close as possible) for accurate shooting. This is rarely necessary for hunting loads.
- D. Some primer flash holes have a burr on the inside, left over from the manufacturing process. These burrs may alter powder ignition, and removing them produces a more uniform load. Deburring tools are made for this, but a small screwdriver or a quarter inch drill bit turned once or twice can do the same job.
- E. Now and then, the primer flash holes have different diameters, causing variations in ignition rates. Discard the out-size cases or sort by size and develop a load for those cases. Never increase the diameter of the flash hole as high pressure and possible injury can occur.
- F. Case necks can also vary in thickness, not only from one case to another, but also from one side of a neck to the other. Either situation causes accuracy problems due to differences in neck tension or in the bullet to bore alignment. For most hunting or pistol ammunition, these variations are insignificant. Target and varmint shooters may benefit by turning case necks on a lathe or using a neck turner to produce cases with uniform neck thickness.
- G. Cases should have clean primer pockets. Ash and residue from the previously fired primer can prevent the new primer from seating to the bottom of the primer pocket. Additionally, there may be more residue in one case than another, resulting in different primer seating depth and thus slightly different ignition.

2. *Primers*

Primers differ. In most circumstances, primer selection won't make a great difference. Accuracy may be better with Brand X than with

Brand Y. Production Lot 123456 of Brand Z may produce better accuracy than lot 789101. Standard Primer D may produce better results than Magnum Primer D. Only you can tell in your firearm.

When switching from one primer to another, you should reduce the powder charge to make sure pressures are safe and acceptable. You should not use magnum primers interchangeably with a load developed with standard primers.

3. Powders

Powders differ. Many powders can produce good accuracy but finding the one that gives the best accuracy requires some trial and error.

In general, less than maximum loads that most nearly fill the case, give the best accuracy. Also, medium burning powders are usually the most suitable, and selecting one from the middle of the list should be a good starting point.

4. Bullets

Bullets differ. Some firearms shoot one bullet better than another. Differences in weight, bullet shape, and quality can affect the final accuracy. For example, you may be seeking an accurate load in your 308 Winchester for bullets in the 165-170 grain range. You may find the Hornady 165 grain Boat Tail Spire Point or the 165 grain Spire Point very accurate. Perhaps 170 grain Flat Point is even more accurate than either of the two 165 grain bullets, and the Hornady 168 grain Boat Tail Hollow Point National Match bullet may be the most accurate of all. Only you can determine which is most accurate in your firearm. Note that if you are developing hunting loads, you probably should keep your selection to Hornady bullets with the "INTERLOCK" design. The wide selection of Hornady bullets offers the reloader a choice for both firearm and intended use.

5. Bullet seating depth

Finally, all firearms are different and so are the dimensions of the chambers. In general, the shorter the distance the bullet has to travel unsupported from the cartridge to the rifling, the better the accuracy. If the bullet travels unsupported, it has a chance to enter the bore slightly off center. The longer the travel, the greater the chance of being misaligned, resulting in poor accuracy. As a reloader, you have control of the seating depth which affects the distance the bullet must "jump". You can determine the best seating depth for your firearm by barely seating a bullet in a sized unprimed case, placing it in the firearm and gently attempting to close the action. Seat the bullet deeper, and again attempt to chamber the shortened cartridge. When it does chamber, polish the bullet with very fine steel wool and re-chamber. Open the action and examine the bullet for marks made by the rifling, evidence the bullet is touching the rifling. This is the absolute maximum Cartridge Overall Length (C.O.L.) for your firearm. It

may differ from what is printed in this reloading manual, as we list SAAMI maximum specifications for overall length. Manufacturing tolerances result in differences in chambers.

Once you have determined the maximum C.O.L., you should seat the bullet approximately $\frac{1}{32}$ " deeper. If the bullet is touching the rifling slightly, it will increase chamber pressure and reducing the C.O.L. eliminates this problem.

The above information is fine for single shot rifles and pistols and many bolt actions, but what about repeating rifles and pistols and revolvers? First, many repeating action firearms have maximum and minimum lengths of cartridges that will function through the action. Cartridges that are too long or too short may jam. Second, the movement of the cartridge from a magazine to the chamber as in semi-automatic firearms, or cartridges lined up head to tail in a tubular magazine, or cartridges subjected to recoil, such as magnum revolver cartridges, must have the bullet crimped in place to prevent bullet movement. Bullet movement could cause a jammed action, or in some cases, a bullet seated too deep, and dangerously increasing pressure. The placement of the crimping cannelure in these circumstances, will determine the cartridge overall length.

Finally, any firearm with a magazine must have cartridges that fit the magazine, and feed easily from it. In this case, magazine dimensions will determine cartridge overall length. In short, bullet seating depth not only affects accuracy, but also functioning and safety.

Adjusting for Headspace

Headspace is the specific distance from one point on the cartridge to another point. It varies from caliber to caliber and from cartridge type to cartridge type (for example; belted to rimless to rimmed. See glossary). This dimension is matched in the chamber by the chamber's tolerance. If the case dimension is much greater than the chamber dimension, the cartridge may not fit. If the case is much shorter than the chamber, the cartridge will chamber, and usually fire, but it will eventually lead to a potentially unsafe condition known as case head separation. Literally, the too short cartridge expands and stretches to fit the chamber. Several firings will cause enough stretching that the case walls become so thin that the case head separates from the body. It is easiest to adjust the sizing die to correct for headspace problems if you are loading rimless cases. Firearms with a too short chamber are rare; most often the chamber is a bit long. You, the reloader, can compensate by backing the resizing die out of the reloading press, thereby maintaining the shoulder to headspace dimension. Some reloaders adjust the resizing die until the die just touches the fired case's shoulder. This can be done by adjusting the resizing die until the resize "ring" on the fired case neck just reaches the cartridge's neck-shoulder junction. This is known as partial resizing. Some reloaders choose to use a neck resizing die that sizes only the cartridge neck and no other part of the case. However, while working well in some single shots and bolt actions,

many neck sized, or partially sized, cases will not work in all actions.

Rimmed cases and belted cases have headspace dimensions determined by the case manufacturer. The reloader can, in some circumstances, treat them like rimless cases. Adjust the resizing die, or use a neck sizer, to prevent case separations, and extend case life. Be aware that your kind of firearm action can preclude these techniques. Trial and error will determine their usefulness.

Resizing Problems

Many resizing problems are a result of improper or inadequate lubrication. There are several ways to lubricate a case. One method is to use a lubricant like Hornady Case Lube on a lube pad. This deposits a small amount of lubricant on the case. Only a thin film is needed, mainly on the body. Too much lubricant, or lubricant on the shoulder, can cause "oil dents". If these are small, they are harmless.

A second method uses Hornady's "Unique" or a similar waxy solid lubricant which is best applied with the finger tips. Put some "Unique" on your fingers, pick up a case, and spread it evenly on a case. Although it may be slower than some methods, it is extremely effective and consistent. One of the fastest and newest methods of lubricating cases is Hornady's "One Shot" case lube, a spray lubricant that leaves a thin coat of a dry wax. Simply spray One Shot on the cases, allow a few seconds for it to spread and dry, and then resize. Use caution since some plastics or finished materials can be damaged by the solvent. Also, make sure that there is adequate ventilation to dissipate solvent fumes.

One other area of the case needs a small amount of lubricant: the inside of the neck. As the expander ball is pulled out of the case, there can be considerable resistance (you can hear the squeal of metal against metal) resulting in elongated necks. The Hornady New Dimension die with its elliptical expander ball alleviates this problem. Nevertheless, a small amount of dry lubricant, such as powdered graphite or Hornady's One Shot works fine. Apply graphite with a small brush or spray on the One Shot. In either case use just a bit in the case mouth. Oily lubricants may contaminate powders or primers, thus dry lubricants are preferred.

Improper or inadequate lubrication can result in a case stuck in the resizing die. Usually, the rim of the case is pulled off in the initial attempt to pull it out. You now have two options: return it to the factory for removal (there is a small service fee) or buy a stuck case remover. The Hornady stuck case remover consists of three parts: a drill bit, a 1/4" - 20 tap and a remover body that fits into a universal shell holder.

Follow these steps:

1. Remove the resizing die, with its stuck case, from the press.
2. Back the deprime spindle out as far as it will go.

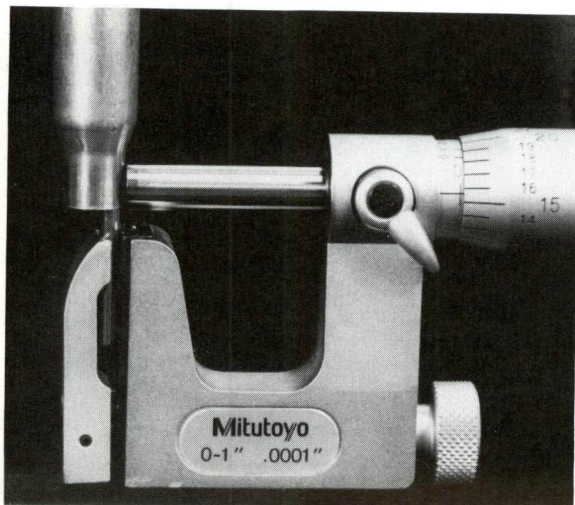
3. Drill into the flash hole with the drill bit, then thread it with the tap.
4. Insert the die with tapped case into the press and insert the remover body into the ram of the press.
5. Raise the ram until the threaded upper portion of the remover body is in contact with the stuck case.
6. Rotate the remover body, turning its threaded portion into the drilled and tapped portion of the stuck case.
7. Lower the ram and remove the stuck case.

The case is, of course, ruined. Next time lubricate properly.

Case Reforming

Occasionally, a reloader wants to take a brass case of one caliber and change it to another design. This process is called case reforming and it usually involves at least two steps: necking down or necking up and fire-forming. The first step can usually be performed in standard dies, using properly lubricated cases. Simple necking down, such as reforming a 30-06 to a 270 Winchester, simply requires the 30-06 cases be full length resized in the 270 Winchester die. More complex reforming operations are apt to require several steps. For example, making 243 Winchester cases directly from 308 Winchester brass often results in folded necks and collapsed shoulders. However, if the 308 cases are first reformed in a 7mm-08 Remington full length resizing die, then in a 243 Winchester full length resizing die, case survival rate will be good. Beware, however, that case necks can be thicker than factory produced cases and can cause pressure problems. Neck turning or neck reaming may be necessary, as well as trimming the case for proper length. See the section on case trimming for more information. Reformed cases may also differ in internal capacity, so maximum loads should be approached with caution.

Necking up operations generally are easier, especially if a tapered



Case neck thickness should be consistent for best accuracy. Thickness should occasionally be measured with special micrometers, as repeated firing or necking down can increase this critical dimension. A too thick case neck can cause pressure problems.

expander plug is used. For instance, 308 Winchester cases can be easily reformed into 358 Winchester cases by inserting a properly lubricated 308 Winchester case into a 358 Winchester full length resizing die equipped with a tapered expander. Expanded necks occasionally split; case annealing can help, but see the section on case annealing. Since the neck is being increased in diameter, neck thickness is not a problem. Case trimming may be necessary to true up and standardize lengths. See the section on case trimming for more information. Again, reformed cases may differ in internal capacity, so maximum loads should be approached with caution.

After reforming, the case often needs to be expanded to fit the chamber of the firearm. For instance, 30-30 Winchester cases can easily be necked down to 7-30 Waters. However, these reformed cases are not fully expanded in the body and shoulder area. Firing a light starting load generally provides sufficient pressure to "fire-form", or expand, the case to perfectly fit the chamber. Some shooters prefer to seat the bullet so it just touches the rifling. These procedures will help insure proper dimension and headspace of the fire-formed cases.

Case Annealing

Occasionally, reloaders find that repeated firing and resizing causes the neck of cases to become brittle, through work hardening, and split. This brittleness can be eliminated by heating the brass, at the neck region only, thus prolonging the life of the case. Reloaders, who are necking up cases also find it useful. This heating and cooling of metal is known as annealing; it is simple and safe to do. Stand a sized, deprimed case in a pan of water. The case head will be under water, while the upper inch of case sticks above the water. Use a propane torch to heat the case neck until it's red hot; immediately tip the case over into the water. The neck is annealed, but the case head retains its original and critical hardness. Once annealed cases are completely dry inside and out, they can be primed and used normally. Re-annealing is usually not necessary for the next 8 to 10 reloads depending on specific situations. Unless they are a special design, or difficult to obtain, it is usually better to just buy new cases.

Priming Problems

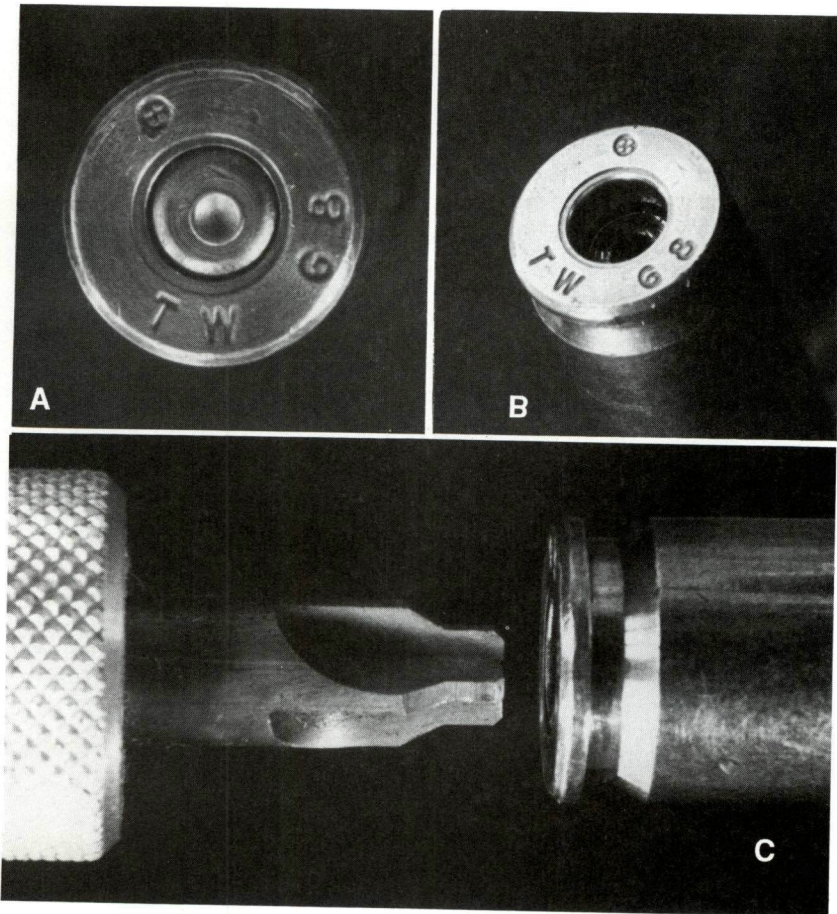
Once in a while, reloaders encounter problems priming cases. These problems include off-center flash holes, Berdan cases, undersize flash holes, oversized flash holes, and crimped in primers.

Cases with off-center flash holes simply should be discarded. Continued use can result in a bent decapper assembly and occasionally, the decapper will punch a separate flash hole in the case, a potentially dangerous problem. Cases with oversize flash holes should be discarded as larger than normal flash holes can cause unexpected high pressure. Undersize flash holes can be increased to standard size with a drill bit.

Most military cases have crimped in primers. This is done to

prevent malfunctioning of automatic firearms during combat. (Military match ammunition usually lacks a crimp.) Unfortunately, this crimp interferes slightly with depriming and repriming. Hornady New Dimension dies feature an unbreakable decapper which easily withstands the stress of depriming these cases, but occasionally, the decapping pin fails to remove the primer and punches straight through. Crimped primers were made to stay in place, and they tend to do just that.

Once the primer is removed, you must remove the crimp before attempting to seat a new primer. Hornady makes a primer pocket reamer, in both large and small primer pocket sizes, designed specifically to remove military crimps. If you have military cases to reload, it is almost a necessity.



Military primers are crimped in place as shown in photograph A. Photograph B shows a military case, deprimed with the crimp removed. It is now ready for repriming. Photograph C shows a Hornady Primer pocket reamer just about to enter a case primer pocket. A few quick twists remove any crimp.

Berdan primed cases have two small, off center flash holes, and thus are not easily deprimed. While commercial Berdan decappers are available, some reloaders find a sharpened ice pick, driven into the fired primer at an angle, off center so the anvil is not damaged, will easily pry the fired primer out. Repriming is fairly standard, but Berdan primers are different sizes than Boxer primers and may not precisely fit standard priming tools. Berdan depriming and priming is possible, but rarely worth the time and effort, especially today, when most cases are available Boxer primed.

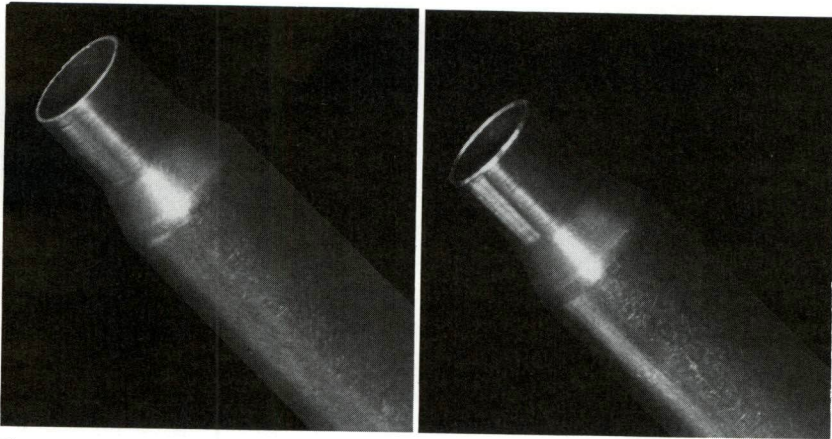
Case Trimming

A case that is too long for the chamber is detrimental to accuracy and can significantly raise pressures. The solution is to trim the cases to the correct length. The maximum case length listed is generally a SAAMI suggested trim length; cases can be trimmed a little shorter with no problems.

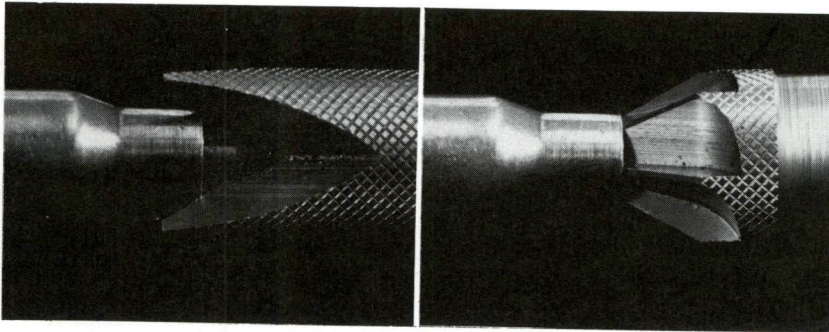
As a rule, a case trimmer such as the Hornady Case Trimmer can be easily used to pare cases to the proper length. Use a good set of calipers to check the length. The Hornady trimmer can be converted from hand turned to power driven with an electric drill which makes for easier and faster trimming of a large number of cases.

While the case trimmer is ideal for quickly removing a few thousandths of an inch, some reloading situations require the removal of much more material. Trimming large amounts of brass is more easily done using a file trim die, hacksaw and finish file. Forming 30 Herrett cases from 30-30 Winchester cases is one example of the usefulness of a file trim die. After reforming the 30-30, you are left with a case nearly $\frac{3}{8}$ " too long. Insert the case in the trim die (which is already in your reloading press) and cut the portion protruding above the die with the hacksaw. The die is especially hardened and will be undamaged by the saw teeth. The cut surface of the case, still in the die, can be filed smooth with a fine file.

Any kind of trimming leaves the case with a square edge on the brass as well as numerous burrs. These burrs, inside and out must be removed and the case mouth chamfered. This is easily performed with a Hornady Chamfering Deburring tool and a few quick twists. A chamfered and deburred case is better for accuracy, as a burr could cause the case to sit slightly off axis in the chamber, or cause the bullet to be misaligned in the case.



The case on the left has a mouth that has not been chamfered. The mouth edge is square and rough. The cartridge on the right has a mouth that has been chamfered.



A Hornady chamfering tool bevels and removes burrs from both the inside and outside of the case mouth.

Crimping Bullets

Crimping bullets in place, a process of folding the case mouth into a groove on the bullet, is also known as roll crimping. Bullets are crimped to hold them in place during recoil or during cycling and chambering of the cartridge. For example, bullets in the cylinder of a magnum revolver tend to creep forward during firing. Too much forward movement could prevent the cylinder from rotating. Cartridges in semi-automatic firearms are stripped from a magazine, shoved up a feeding ramp and pushed into a chamber in a few hundredths of a second. There is considerable pressure placed on the bullet, creating the possibility of pushing it deeper in the case, perhaps dangerously raising pressures. Rifles with tubular magazines have bullets sitting end to end. When fired, these cartridges have considerable pressures applied, again creating the possibility of bullets being seated deeper and pressures rising. Finally, some slow burning powders take longer to ignite fully. The initial resistance of the bullet to movement can

make the powder ignition more consistent and the load more accurate. A good crimp helps the bullet resist movement. This is especially true for magnum revolver cartridges and other powders like Winchester 296 and Hodgdon 110. Both are excellent powders, but a good crimp helps ignition and accuracy, besides keeping the bullet from moving during recoil.

A final variation of crimping is taper crimping. This is most frequently used for semi-automatic pistol cartridges which headspace on the case mouth. A standard roll crimp would prevent normal head spacing. However, a die with a gentle taper will push the brass case tightly around the bullet without deforming the case mouth yet maintain consistent headspace. Since many semi-auto pistol bullets lack a crimping groove, standard roll crimping would be difficult. Hornady makes a number of taper crimp dies in different calibers.

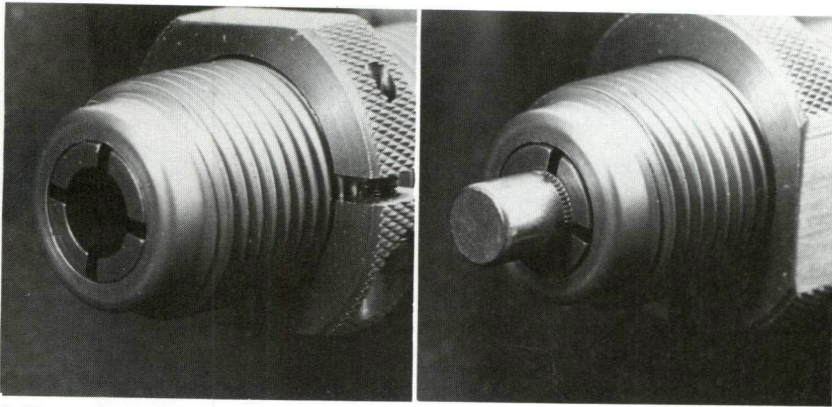
Bullet Pulling

Pencils are equipped with erasers to correct mistakes. Bullet pullers are made to take apart unwanted, loaded cartridges. Sometime, somewhere, a cartridge will be loaded that for some reason is not shootable, but the bullet and primed case can be saved. (Saving powder is not wise unless you are absolutely certain of the kind of powder.) Bullet pullers come in a variety of styles: hammer or inertia, the pliers and the collet.

The inertia type holds a loaded cartridge by the rim or extractor groove inside a hollow, hammer-like structure. By hitting the device against something solid, the bullet comes out of the case. It's slow, tiring and inconvenient if a large number of bullets are to be pulled, but it's effective and will pull virtually all bullets, including flush seated wadcutters, without damaging the bullets.

Pliers type pullers are used by grasping the bullet of a loaded cartridge. The cartridge is placed in a press and the bullet grasped where it projects above the die opening. By lowering the ram while maintaining the grip on the bullet, it is extracted from the case. This type of bullet puller is fast and easy, but it usually leaves marks on the bullet and it only works on fairly long cartridges with bullets that project beyond the case. For example, it works well on the 300 Winchester but it won't work at all on 32 S&W wadcutters.

The last puller is the collet type. It consists of a die with collet insert that can be tightened. The die, with insert, is placed in the reloading press. A cartridge is placed in the shell holder and the ram raised up until the bullet is inside the collet. The collet is tightened, gripping the bullet and the ram is lowered, leaving the bullet in the collet. This bullet puller is not as fast as the pliers variety, but it is easy and usually leaves the bullet in good condition. However, it also can't pull wadcutters. Hornady's collet bullet puller is available in a variety of calibers.



A Hornady Bullet Puller die, collet type, showing, on the left the die without a bullet and on the right, the die tightly gripping a bullet.

Loading for Lever Actions, Pump Actions and Semi-Automatic Firearms

These three types of firearms have several common characteristics. First, they are repeaters fed from either a tubular or box magazine. While this is certainly not a problem, it may involve special considerations for bullet seating depth, bullet crimping and, in the case of tubular magazines, specifically designed bullets.

The second characteristic is a lack of camming power needed to close the action, making it difficult for these firearms to fully chamber a slightly oversize cartridge. The solution is simple. It is probably best to full length resize cases for these firearms to insure easy chambering. We caution you to test reloads in your firearm for reliable feeding, and chambering, before using them for hunting. Finally, it is sensible to use medium burning rate powders for semi-automatic firearms. These firearms are designed and balanced internally for specific gas pressures or recoil impulses. Recoil operated firearms need a certain amount of recoil during the reloading cycle for reliable functioning. Gas operated firearms divert some gases from the burning powder in the barrel to cycle the action. The amount of pressure at the point where the gas is diverted from the barrel is known as port pressure. These firearms are designed to operate within a specific range of port pressures. A fast burning powder usually has a lower port pressure than normal, while a slow burning powder may have higher pressure than the range specifies. These differences may cause undue stress on the operating parts, resulting in increased wear and possible damage, as well as failure to function properly. In severe instances, case rims can be pulled off by the extractor while the case is still tightly stuck in the chamber. In summary there are some practical limitations on bullet weight and style, and powder choice, dictated by your firearm.

Effects of Temperature

Warmer temperatures increase chamber pressures and velocities

slightly. This is rarely a problem with today's powders and firearms. However, it may be a concern for the reloader who developed a maximum load in cool weather and shoots in hot weather. Keep in mind the temperatures at which the cartridge is to be shot.

Cooler temperatures tend to lower pressures and velocities slightly, but unless it is extremely cold, it's rarely a problem. Some shooters have reported unexpected high pressure problems or failure to fire at all. This is generally due to an ignition problem caused by intense cold. If possible, keep your cartridges warm. Temperature problems occur infrequently.

The mechanism of your firearm is of greater concern in cold environments. Oil and grease that function fine at normal temperatures can turn into gummy solids that jam up a mechanism. If you are planning to shoot or hunt in cold weather, it is prudent practice to completely clean and degrease your firearm's action, and relubricate with a dry lubricant such as Hornady's One Shot.

Recoil

Recoil is the "kick" or reaction of the firearm to the bullet and gases being blown out the barrel. While recoil is a physical fact, it can be felt differently. For instance, addition of recoil pads, mercury filled recoil absorbers, muzzle brakes or various stock design can all help reduce felt recoil. However, these might not suit your idea of how your gun should look, and you might feel they are too expensive. You, as a reloader, can do several things to reduce recoil. One is to use a less than maximum load. Second, using a lighter bullet may reduce felt recoil. Third, and perhaps most significantly, you can start with a medium load and work up to a more powerful load. Practice and experience seem to make most high recoil loads and firearms more tolerable. In most hunting situations, recoil is barely noticeable and rarely a problem.

DEVELOPING A LOAD

It is often said that each firearm is a law unto itself when it comes to finding an accurate load. Due to differences in firearms and components, what is accurate in one firearm may not be accurate in another. Likewise, what is a near maximum load in one firearm may be a dangerously excessive load in a different firearm. Thus it is important to develop a load or loads for your individual firearm.

Developing a tailor made load for your firearm can be one of the most rewarding aspects of reloading. You have the ability to change powders, charges, primers, bullets or cases to meet your requirements, and to match your rifle or handgun, as well as, your personal shooting habits. Developing a load begins with a decision on its intended use, accuracy requirements, ballistic specifications, and your own expectations.

We think the intended use is the most important yardstick, and will probably make the decision for you. For instance, if you are hunting small varmints with a 243 Winchester, you might choose a Hornady 75 grain Hollow Point. However, if you are hunting deer with your 243, the 100 grain Interlock Spire Point will be a better choice. There are few right or wrong selections when choosing a bullet; there are better choices than others, but it depends on your requirements. Read Bullet Construction and Selection, and the Optimum Usage and Performance criteria in our bullet information chart on pages 77-96 for guidance in matching bullet to use.

Accuracy means different things to different people. To the eastern woodland whitetail deer hunter, accuracy may represent five shots in a four inch circle at 100 yards, while a prairie dog hunter in Wyoming might think of accuracy as five shots in a one inch circle. These five shots are often referred to as a group, specifically, a five shot group. Some might refer to it as a five shot, one inch group or simply a one inch group; others refer to a minute of angle group. A minute of angle is simply $\frac{1}{60}$ of one degree of angle at 100 yards. One minute of angle represents a circle slightly larger than one inch at one hundred yards. At two hundred yards, a minute of angle is slightly more than two inches, and so on. A benchrest shooter may find either the four inch group of the deer hunter, or the one inch group of the prairie dog hunter, totally unacceptable for his accuracy requirement. The combat pistol shooter might be happy with either.

Acceptable accuracy is what you determine meets your requirements. If you have one rifle for varmint hunting and know your requirements for range and varmint size, you may be well satisfied with $1\frac{1}{2}$ inch groups. If your deer rifle is a lever action carbine and you expect to hunt in heavy brush a $2\frac{1}{2}$ inch group is a reasonable expectation.

Rifle or handgun accuracy depends on a number of factors. For example, the quality and condition of the barrel is of prime importance. A poor quality barrel, a rusted, pitted barrel, or a badly fouled barrel can hardly be expected to be a tack driver. Barrel and action bedding,

trigger quality, brass case quality and sights also affect accuracy. A top-notch reloaded cartridge can accomplish much in the way of improved accuracy, but it is unlikely to make a poorly constructed firearm into an accurate one. And, of course, we assume a skillful shooter is in control.

After picking the appropriate Hornady bullet for your particular use, the next step is developing the right load. Although there are accuracy differences between cases and primer, powder is the major variable, both as to kind and amount. It should be pointed out that each firearm is unique. Often what is accurate in one rifle or handgun may not be accurate in a different firearm of the same make and model. Due to the variety of firearms, semi-autos, bolt actions, single shots or lever actions, it is difficult to specify a powder and load that are guaranteed to be accurate in your rifle or handgun. However, we can recommend certain powders that have performed well for us in a variety of firearms. Since our ballistics laboratory personnel load and shoot an above average number of rounds, we feel confident that our suggestions are a good place to start.

Ballistic requirements need to reflect your intended use, and the expected conditions. For instance, a boat tail bullet has a high Ballistic Coefficient (B.C.) and will have less crosswind drift and a flatter trajectory than a comparable flat base bullet. This can be a significant factor if you are a South Dakota prairie dog hunter. Shots at 300-500 yards are frequent, and strong winds are the rule rather than the exception. A flatter trajectory with reduced wind sensitivity means a greater chance of hitting the dog. Also, due to the higher ballistic coefficient, the bullet has more energy at a given distance than a similar weight flat base bullet propelled at the same muzzle velocity.

Here are some specific numbers to consider. We will select a 180 grain, 30 caliber bullet for a .30-06, and a muzzle velocity of 2700 feet per second. We will use three bullets, the 180 grain round nose, (B.C. .241) and the 180 grain spire point (B.C. .425), and the 180 grain boat tail spire point (B.C. .452). Arranged in order of lowest B.C. to highest we have the following data:

.308" 180 GRAIN ROUND NOSE

S.D. .271
B.C. .241

RANGE	MUZZLE	100 yds	200 yds	300 yds	400 yds	500 yds	600 yds
VELOCITY (fps)	2700	2338	2005	1703	1439	1226	1077
ENERGY (ft.-lbs.)	2913	2185	1607	1159	828	601	464

.308" 180 GRAIN SPIRE POINT

S.D. .271
B.C. .425

RANGE	MUZZLE	100 yds	200 yds	300 yds	400 yds	500 yds	600 yds
VELOCITY (fps)	2700	2491	2292	2102	1921	1751	1592
ENERGY (ft.-lbs.)	2913	2480	2099	1766	1475	1225	1013

.308" 180 GRAIN BOAT TAIL SPIRE POINT

S.D. .271
B.C. .452

RANGE	MUZZLE	100 yds	200 yds	300 yds	400 yds	500 yds	600 yds
VELOCITY (fps)	2700	2504	2315	2135	1963	1800	1647
ENERGY (ft.-lbs.)	2913	2505	2142	1822	1541	1295	1084

If we compare the data from these three bullets, we can see the differences in their down range performance. To emphasize these differences, let us look at the worst case-best case situation by comparing the .30, 180 grain Round Nose (RN) to the 30 caliber, 180 grain Boat Tail Spire Point (BTSP). At 200 yards, the BTSP has 2,142 foot pounds of energy compared to the RN's 1,607, an advantage of 535 foot pounds, a 33.3 percent difference! Likewise, the 180 grain RN would drift sideways 6.5 inches in a 10 mph wind, whereas the 180 grain BTSP would drift only 3.1 inches in the same wind. This is a significant difference. Why then would anyone choose the 180 grain RN bullet? For the South Dakota prairie dog hunter it would be a poor choice, but if it is to be used in a hunting situation where all shots are less than 100 yards, it could be an excellent choice. Perhaps it simply shoots more accurately in this particular .30-06, than any other bullet. The choice is yours.

Once you have chosen the components, bullet weight and style, primer type, powder and cartridge case, the process of load testing begins.

You must determine the bullet seating depth for your load. Listed in the reloading data is the seating depth which will give the standard cartridge overall length (C.O.L.) as listed by the Sporting Arms Ammunition Manufacturers Institute (SAAMI). Hornady data was developed to meet SAAMI standards for C.O.L. Seating the bullet deeper with a certain charge will probably raise chamber pressures, while seating the bullet shallower may lower these pressures. Your seating depth can be determined by the crimping cannellure if you are crimping your bullets, by magazine length or by the dimensions of your firearm's chamber. Use a spare empty cartridge case to make a dummy seating round.

HOW THIS DATA WAS DEVELOPED

In general, we have selected components that are usually available through commercial dealers. Cases are Hornady cases whenever possible; otherwise, we used Winchester, Remington, Federal, Weatherby or Norma. Some specialty calibers are restricted to proprietary cases.

Standard primers were used for most calibers with most powders. In larger cases with slower powders magnum primers were used as they generally produce a hotter flame of longer duration and are useful for consistently igniting large charges of slow powders. Powders were selected using several criteria. One important criterion is burning rate. Although there can be several charges of certain powders that will work, we have chosen the most appropriate, as well as the most commonly available powders for each caliber. The powders listed are available to most reloaders all over the U.S. We tried to select a powder from each major manufacturer. Bullets, of course, are Hornady. We have chosen the most useful and optimum for each caliber. For instance, the 300 Savage could fire a 220 grain bullet, however, the usefulness of such a load is limited. The velocity would be so low that there would be little, if any expansion. To be safe, rifles with tubular magazines require flat nose or round nose bullets, because a pointed bullet behind another cartridge could, during recoil, act as a firing pin causing the cartridge in front of it to discharge, resulting in damage or injury. Flat or round nose bullets have such a broad surface that an accidental discharge won't occur. Bullets are seated to a depth to meet standard overall length as established by SAAMI. Bullets of different design, but of the same weight, can generally be substituted for the same data. Nevertheless, if a load is developed for one style of bullet in a particular weight, it is wise, and we recommend, reducing the powder charge slightly with a different style bullet of the same weight. For example, if a maximum charge is used with a 180 grain .308 SPBT bullet, it should be reduced 5-10% when using a 180 round nose flat base. The 180 round nose bullet has more jacket surface area touching the barrel, and, therefore, slightly more friction which could cause higher pressures. It is always prudent to reduce an established charge, and gradually work to a new load with the new bullet.

When possible, loading data was fired in a special firearm designed to measure pressure. There is a description of a pressure gun in the glossary. The barrel and chamber dimensions are carefully produced to exact SAAMI specifications. Data is generated until a maximum pressure, determined by SAAMI, is reached. These various loads are then test fired in commercially available firearms for velocity. The powder charge and velocity chart in the Hornady Manual were derived from these test firings.

In some calibers, pressure barrels were not available. We tested various loads in these by examining the brass case and the fired case extracted from the chamber. The brass case will show several indications of increasing pressures. One, is case head expansion as measured by a good micrometer, and compared to a fired, factory loaded

cartridge. Other signs are cratered or flattened primers, brass flow into ejector slots, and case head separations, as well as, difficult case extraction. These indicators are covered in the discussion on examining the fired, reloaded shell.

All testing of this reloading data was done at 70 degrees Fahrenheit. Higher temperatures usually increase pressure and velocity. Lower temperatures generally lower pressures and velocity.

HORNADY BULLETS

Many reloaders are concerned about bullet performance. Bullet performance has different meanings to different shooters. Accuracy may be what a target shooter uses to measure performance while varmint hunters may want a combination of accuracy and explosiveness. However, big game hunters not only want to hit their target, but also quickly and humanely dispatch it. In some cases a hunter's life may depend on a bullet's performance.

Accuracy is almost solely dependent on concentricity and to some degree the bullet's shape. If a bullet is "out of balance" due to the jacket being thicker on one side, it will shoot differently from the next bullet. This factor is essentially a product of consistent production and quality control. While weight variation can cause accuracy problems, more important are variations in velocity and recoil. In our tests, variations as much as plus or minus 10% still resulted in minute of angle accuracy.


Terminal Ballistics

The study of a bullet's action and performance when it hits the target is known as terminal ballistics. The way the bullet is designed is an important factor in terminal ballistic performance. Jacket composition affects bullet penetration and expansion. Jacketed Hornady bullets use gilding metal (a copper-zinc mixture) to cover the lead core (except for some of the full metal jacket bullets for dangerous big game hunting). However, the thickness of the jacket can be controlled and altered for performance. Very thin jackets, such as those found in Hornady Super Explosive Bullets, allow for extremely rapid expansion. Thicker jackets offer more controlled expansion and tapered jackets allow rapid initial expansion but slowed expansion where the jacket becomes thicker. Also, the Interlock Ring is an internal structure that tightly holds the lead core and jacket together during expansion, allowing deeper penetration.


The following table of Hornady bullets contains a number of specifications of interest to shooters and reloaders. First listed is the order number, a picture of the bullet, its diameter, its weight, Interlock construction, its sectional density (a ratio of weight to diameter: see glossary), its ballistic coefficient (relative aerodynamic efficiency: see glossary), the best use for the bullet (i.e., target shooting, varmint shooting), and the most useful velocity range. These characteristics are important for a reloader in making a bullet choice for reloading.


RIFLE & SINGLE SHOT PISTOL BULLETS


	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
17 CALIBER BULLETS											


	17 (.172")	25 gr.	.187	.121	✓					3200 - 4100 fps
#1710 HP										


22 CALIBER BULLETS


	22 (.222")	40 gr.	.104	.116	✓					1500 - 2900 fps
#2210 JET										


	22 (.223")	45 gr.	.202	.129	✓					2100 - 3600 fps
#2220 HORNET										


	22 (.224")	45 gr.	.202	.128	✓					2100 - 3600 fps
#2230 HORNET										










	22 (.224")	50 gr.	.214	.142	✓					2000 - 3400 fps
#2240 SXSP										










	22 (.224")	50 gr.	.214	.142	✓					2000 - 4000 fps
#2245 SP										










	22 (.224")	52 gr.	.229	.148	✓	✓				2000 - 3800 fps
#2249 BTHP MATCH										



	22 (.224")	53 gr.	.218	.151	✓	✓				2000 - 3800 fps
#2250 HP MATCH										

	22 (.224")	55 gr.	.235	.157	✓					1800 - 3500 fps
#2260 SXSP										







	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #2265 SP	22 (.224")	55 gr.	.235	.157	✓					1800 - 3800 fps	
 #2266 SP w/c	22 (.224")	55 gr.	.235	.157	✓					1800 - 3800 fps	
 #2267 FMJ-BT	22 (.224")	55 gr.	.243	.157	✓					1800 - 3800 fps	
 #2270 SP	22 (.224")	60 gr.	.264	.171	✓					1800 - 3700 fps	
 #2275 HP	22 (.224")	60 gr.	.271	.171	✓					1800 - 3700 fps	
 #2278 BTHP MATCH	22 (.224")	68 gr.	.330	.194	✓	✓				1600 - 3000 fps	
 #2280 SP	22 (.227")	70 gr.	.296	.194			✓			2500 - 3200 fps	
6mm CALIBER BULLETS											
 #2410 SP	6mm (.243")	70 gr.	.262	.169	✓					2300 - 3600 fps	
 #2415 SXSP	6mm (.243")	70 gr.	.269	.169	✓					2300 - 3500 fps	

	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #2420 HP	6mm (.243")	75 gr.	.294	.181	✓					2300 - 3600 fps	
 #2430 FMJ	6mm (.243")	80 gr.	.261	.194	✓					2100 - 3500 fps	
 #2435 SSSP I	6mm (.243")	80 gr.	.283	.194	✓	✓				2100 - 3000 fps	
 #2440 SP	6mm (.243")	87 gr.	.327	.210	✓	✓				2200 - 3300 fps	
 #2442 BTHP	6mm (.243")	87 gr.	.376	.210	✓	✓				2200 - 3300 fps	
 #2450 SP I	6mm (.243")	100 gr.	.381	.242		✓				2700 - 3300 fps	
 #2453 BTSP I	6mm (.243")	100 gr.	.405	.242		✓				2700 - 3300 fps	
 #2455 RN I	6mm (.243")	100 gr.	.230	.242		✓				2700 - 3300 fps	
25 CALIBER BULLETS											
 #2510 FP	25 (.257")	60 gr.	.101	.130	✓					2200 - 3800 fps	


	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #2520 HP	25 (.257")	75 gr.	.257	.162	✓					2800 - 4000 fps	
 #2530 SP	25 (.257")	87 gr.	.322	.188	✓					2600 - 3800 fps	
 #2540 SP I	25 (.257")	100 gr.	.357	.215		✓				2700 - 3600 fps	
 #2550 RN I	25 (.257")	117 gr.	.243	.253		✓				1800 - 3300 fps	
 #2552 BTSP I	25 (.257")	117 gr.	.391	.253		✓				2300 - 3300 fps	
 #2560 HP I	25 (.257")	120 gr.	.394	.260		✓				2400 - 3200 fps	
6.5mm CALIBER BULLETS											
 #2610 SP	6.5mm (.264")	100 gr.	.358	.205	✓	✓				1800 - 3600 fps	
 #2620 SP I	6.5mm (.264")	129 gr.	.445	.264		✓				1600 - 3300 fps	
 #2630 SP I	6.5mm (.264")	140 gr.	.465	.287		✓	✓			1500 - 3200 fps	










	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE
 #2633 BTHP MATCH	6.5mm (.264")	140 gr.	.484	.287	✓					2100 - 3200 fps
 #2640 RN I	6.5mm (.264")	160 gr.	.283	.328			✓	✓		2000 - 2900 fps




270 CALIBER BULLETS

 #2710 SP	270 (.277")	100 gr.	.307	.186	✓					3000 - 3800 fps
 #2720 HP	270 (.277")	110 gr.	.352	.205	✓					2900 - 3500 fps
 #2730 SP I	270 (.277")	130 gr.	.409	.242			✓	✓		2800 - 3400 fps
 #2735 BTSP I	270 (.277")	140 gr.	.486	.261			✓	✓		2700 - 3300 fps
 #2740 SP I	270 (.277")	150 gr.	.462	.279			✓	✓		2600 - 3200 fps
 #2745 RN I	270 (.277")	150 gr.	.269	.279			✓	✓		2600 - 3200 fps

7mm CALIBER BULLETS










 #2800 HP	7mm (.284")	100 gr.	.279	.177	✓	✓				2600 - 3600 fps
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	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #2810 SP	7mm (.284")	120 gr.	.350	.213	✓	✓				2600 - 3500 fps	
 #2811 SSSP I	7mm (.284")	120 gr.	.350	.213		✓	✓			1700 - 2500 fps	
 #2815 HP	7mm (.284")	120 gr.	.334	.213		✓	✓			2600 - 3500 fps	
 #2820 SP I	7mm (.284")	139 gr.	.392	.246			✓	✓		2300 - 3300 fps	
 #2822 FP I	7mm (.284")	139 gr.	.196	.246			✓			2200 - 2600 fps	
 #2825 BTSP I	7mm (.284")	139 gr.	.453	.246			✓	✓		2500 - 3300 fps	
 #2830 SP I	7mm (.284")	154 gr.	.433	.273			✓	✓		2300 - 3200 fps	
 #2835 RN I	7mm (.284")	154 gr.	.279	.273			✓	✓		2300 - 3200 fps	
 #2840 BTHP MATCH	7mm (.284")	162 gr.	.534	.287	✓					2300 - 3000 fps	

	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #2845 BTSP I	7mm (.284")	162 gr.	.514	.287		✓	✓			2300 - 3000 fps	
 #2850 SP I	7mm (.284")	175 gr.	.462	.310		✓	✓			2300 - 2900 fps	
 #2855 RN I	7mm (.284")	175 gr.	.285	.310		✓	✓			2300 - 2900 fps	



30 CALIBER BULLETS

 #3005 SJ	30 (.308")	100 gr.	.152	.151	✓					1800 - 3100 fps	
 #3010 SP	30 (.308")	110 gr.	.256	.166	✓					1800 - 3900 fps	
 #3015 RN	30 (.308")	110 gr.	.150	.166	✓					1800 - 3100 fps	
 #3017 FMJ	30 (.308")	110 gr.	.178	.166	✓					1800 - 3100 fps	
 #3020 SP	30 (.308")	130 gr.	.295	.196	✓	✓				2500 - 3700 fps	
 #3021 SSSP I	30 (.308")	130 gr.	.295	.196	✓	✓				1700 - 2500 fps	



	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #3031 SP I	30 (.308")	150 gr.	.338	.226		✓	✓			2700 - 3400 fps	
 #3033 BTSP I	30 (.308")	150 gr.	.349	.226		✓	✓			2700 - 3400 fps	
 #3035 RN I	30 (.308")	150 gr.	.186	.226		✓				1800 - 2500 fps	
 #3037 FMJ-BT	30 (.308")	150 gr.	.398	.226	✓	✓				2200 - 3400 fps	
 #3040 SP I	30 (.308")	165 gr.	.387	.248		✓	✓			2200 - 3300 fps	
 #3045 BTSP I	30 (.308")	165 gr.	.435	.248		✓	✓			2200 - 3300 fps	
 #3050 BTHP NAT'L MATCH	30 (.308")	168 gr.	.450	.253	✓					2300 - 3200 fps	
 #3060 FP I	30 (.308")	170 gr.	.189	.256		✓				2000 - 2500 fps	
 #3070 SP I	30 (.308")	180 gr.	.425	.271		✓	✓			2400 - 3200 fps	









	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #3072 BTSP I	30 (.308")	180 gr.	.452	.271		✓	✓			2400 - 3200 fps	
 #3075 RN I	30 (.308")	180 gr.	.241	.271		✓	✓			2400 - 3200 fps	
 #3080 BTHP MATCH	30 (.308")	190 gr.	.530	.286	✓					2200 - 3100 fps	
 #3085 BTSP I	30 (.308")	190 gr.	.491	.286		✓	✓			2200 - 3100 fps	
 #3090 RN I	30 (.308")	220 gr.	.300	.331				✓	✓	2500 - 2800 fps	



7.62mm CALIBER BULLETS

 #3140 SP	7.62x39 (.310")	123 gr.	.252	.183		✓				1900 - 2500 fps	
 #3147 FMJ	7.62x39 (.310")	123 gr.	.266	.183	✓	✓				1900 - 2500 fps	


303 CALIBER BULLETS

 #3120 SP I	303 (.312")	150 gr.	.361	.220		✓				2300 - 2700 fps	
 #3130 RN I	303 (.312")	174 gr.	.262	.255		✓	✓			2200 - 2600 fps	






	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL VELOCITY RANGE
32 CALIBER BULLETS										
 #3210 FP I	32 (.321")	170 gr.	.249	.236		✓				1900 - 2200 fps
8mm CALIBER BULLETS										
 #3230 SP	8mm (.323")	125 gr.	.246	.171		✓	✓			2600 - 3600 fps
 #3232 SP I	8mm (.323")	150 gr.	.290	.205			✓	✓		2500 - 3400 fps
 #3235 RN I	8mm (.323")	170 gr.	.217	.233			✓	✓		2400 - 3200 fps
 #3238 SP I	8mm (.323")	220 gr.	.464	.301			✓	✓	✓	2600 - 2900 fps
338 CALIBER BULLETS										
 #3310 SP I	338 (.338")	200 gr.	.361	.250			✓	✓		2500 - 3200 fps
 #3315 FP I	338 (.338")	200 gr.	.200	.250			✓	✓		1700 - 2200 fps
 #3320 SP I	338 (.338")	225 gr.	.397	.281				✓	✓	2500 - 3000 fps


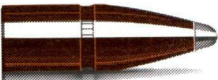



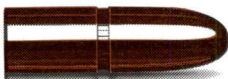
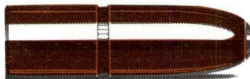

	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL RANGE	VELOCITY
 #3330 RN I	338 (.338")	250 gr.	.291	.313				✓	✓	2400 - 2800 fps	
 #3335 SP I	338 (.338")	250 gr.	.431	.313				✓	✓	2400 - 2800 fps	






348 CALIBER BULLETS

 #3410 FP I	348 (.348")	200 gr.	.246	.236				✓	✓	2200 - 2500 fps	
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35 CALIBER BULLETS





 #3505 SSSP I	35 (.358")	180 gr.	.248	.201				✓		1600 - 2400 fps	
 #3510 SP I	35 (.358")	200 gr.	.282	.223				✓	✓	1800 - 2900 fps	
 #3515 RN I	35 (.358")	200 gr.	.195	.223				✓	✓	1800 - 2900 fps	
 #3520 SP I	35 (.358")	250 gr.	.375	.279				✓	✓	2300 - 2800 fps	
 #3525 RN I	35 (.358")	250 gr.	.271	.279				✓	✓	2300 - 2800 fps	

	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL VELOCITY RANGE
375 CALIBER BULLETS										
 #3705 FP I	375 (.375")	220 gr.	.217	.223		✓	✓			1700 - 2200 fps
 #3710 SP I	375 (.375")	270 gr.	.380	.274			✓	✓		2400 - 3100 fps
 #3715 RN I	375 (.375")	270 gr.	.253	.274			✓	✓		2400 - 3100 fps
 #3720 RN I	375 (.375")	300 gr.	.250	.305			✓	✓		2300 - 2900 fps
 #3725 BTSP I	375 (.375")	300 gr.	.460	.305			✓	✓		2300 - 2900 fps
 #3727 FMJ-RN	375 (.375")	300 gr.	.275	.305				✓		2300 - 2900 fps
416 CALIBER BULLETS										
 #4165 RN I	416 (.416")	400 gr.	.311	.330			✓	✓		1600 - 2600 fps
 #4167 FMJ-RN	416 (.416")	400 gr.	.319	.330				✓		1600 - 2600 fps






	CAL. / DIA.	WEIGHT	B.C.	S.D.	TARGET-MATCH	VARMINT	MEDIUM GAME	LARGE GAME	DANGEROUS GAME	USEFUL VELOCITY RANGE
44 CALIBER BULLETS										
 #4300 FP I	44 (.430")	265 gr.	.189	.205		✓	✓			1500 - 2200 fps
45 CALIBER BULLETS										
 #4500 HP	45 (.458")	300 gr.	.197	.204		✓	✓			1600 - 2100 fps
 #4502 RN I	45 (.458")	350 gr.	.189	.238		✓	✓	✓		1800 - 2900 fps
 #4504 RN I	45 (.458")	500 gr.	.287	.341				✓		1600 - 2600 fps
 #4507 FMJ-RN	45 (.458")	500 gr.	.295	.341				✓		1600 - 2600 fps









PISTOL BULLETS


	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL RANGE	VELOCITY
25 CALIBER BULLETS											
 #3545 FMJ-RN	25 (.251")	50 gr.	.116	.113	✓	✓					650 - 850 fps
 #35460 HP/XTP	25 (.251")	50 gr.	.108	.113	✓	✓					650 - 850 fps
32 CALIBER BULLETS											
 #3200 FMJ-RN	32 (.311")	71 gr.	.118	.105	✓	✓					700 - 1100 fps
 #32050 HP/XTP	32 (.312")	85 gr.	.145	.125	✓	✓		✓			750 - 1550 fps
9mm CALIBER BULLETS											
 #35500 HP/XTP	9mm (.355")	90 gr.	.099	.102	✓	✓					800 - 1500 fps
 #3552 FMJ-RN	9mm (.355")	100 gr.	.115	.113	✓	✓					750 - 1300 fps
 #35540 HP/XTP	9mm (.355")	115 gr.	.129	.130	✓	✓					800 - 1400 fps
 #3555 FMJ-RN	9mm (.355")	115 gr.	.140	.130	✓	✓					900 - 1300 fps

	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL RANGE	VELOCITY
 #3556 FMJ-FP	9mm (.355")	124 gr.	.174	.141	✓	✓		✓		900 - 1200 fps	
 #3557 FMJ-RN	9mm (.355")	124 gr.	.145	.141	✓	✓				900 - 1200 fps	
 #35580 HP/XTP	9mm (.355")	147 gr.	.212	.141	✓	✓	✓	✓		750 - 1200 fps	
 #3559 FMJ-RN	9mm (.355")	147 gr.	.212	.141	✓	✓		✓		800 - 1200 fps	






38 CALIBER BULLETS

 #35700 HP/XTP	38 (.357")	110 gr.	.131	.123	✓	✓				900 - 1400 fps	
 #35710 HP/XTP	38 (.357")	125 gr.	.151	.140	✓	✓				850 - 1600 fps	
 #35730 FP/XTP	38 (.357")	125 gr.	.148	.140	✓	✓				1200 - 1700 fps	
 #35740 HP/XTP	38 (.357")	140 gr.	.169	.157	✓	✓	✓			850 - 1600 fps	
 #35750 HP/XTP	38 (.357")	158 gr.	.206	.177	✓		✓		✓	700 - 1400 fps	




	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL VELOCITY RANGE
 #35780 FP/XTP	38 (.357")	158 gr.	.199	.177	✓	✓		✓		1175 - 1800 fps
 #3572 JTC-SIL	38 (.357")	160 gr.	.181	.179	✓	✓		✓		650 - 2000 fps
 #3577 JTC-SIL	38 (.357")	180 gr.	.232	.202	✓	✓		✓		650 - 2000 fps
10mm CALIBER BULLETS										
 #40000 HP/XTP	10mm (.400")	155 gr.	.137	.138	✓	✓				850 - 1300 fps
 #40040 HP/XTP	10mm (.400")	180 gr.	.164	.161	✓	✓	✓			750 - 1450 fps
 #4007 FMJ-FP	10mm (.400")	200 gr.	.182	.179	✓	✓	✓			700 - 1200 fps
 #40060 HP/XTP	10mm (.400")	200 gr.	.199	.179	✓	✓	✓			700 - 1200 fps
.41 CALIBER BULLETS										
 #41000 HP/XTP	41 (.410")	210 gr.	.182	.178	✓	✓				1000 - 1450 fps





	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET GAME	MET. SILHOUETTE	USEFUL VELOCITY RANGE
 #4105 JTC-SIL	41 (.410")	210 gr.	.187	.178	✓				✓	1000 - 1450 fps

44 CALIBER BULLETS




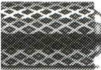




 #44050 HP/XTP	44 (.430")	180 gr.	.138	.139	✓		✓			750 - 1400 fps
 #44100 HP/XTP	44 (.430")	200 gr.	.170	.155	✓		✓			750 - 1650 fps
 #44200 HP/XTP	44 (.430")	240 gr.	.205	.185	✓		✓		✓	900 - 1800 fps
 #4425 JTC-SIL	44 (.430")	240 gr.	.174	.185	✓		✓		✓	1100 - 1800 fps
 #44280 HP/XTP	44 (.430")	300 gr.	.245	.232	✓		✓		✓	850 - 1900 fps


45 CALIBER BULLETS

 #45100 HP/XTP	45 (.451")	185 gr.	.139	.130	✓	✓				750 - 1450 fps
 #4513 FMJ SWC	45 (.451")	185 gr.	.068	.130	✓	✓		✓		700 - 1100 fps
 #4515 FMJ-C/T	45 (.451")	200 gr.	.115	.140	✓	✓		✓		700 - 1100 fps



	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL VELOCITY RANGE
 #4517 FMJ-RN	45 (.451")	230 gr.	.184	.162	✓		✓	✓		600 - 1650 fps
 #4518 FMJ-FP	45 (.451")	230 gr.	.168	.162	✓		✓	✓		600 - 1650 fps
 #45200 HP/XTP LONG COLT	45 (.452")	250 gr.	.146	.175	✓	✓		✓		800 - 1600 fps
 #45230 HP/XTP	45 (.452")	300 gr.	.180	.210	✓	✓		✓		800 - 1700 fps

LEAD PISTOL BULLETS




	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL VELOCITY RANGE
32 CALIBER BULLETS										
 #3252 HBWC	32 (.314")	90 gr.	.040	.130	✓		✓			700- 900 fps
 #3250 SWC	32 (.314")	90 gr.	.096	.130	✓	✓	✓			700- 900 fps
9mm CALIBER BULLETS										
 #3567 LRN	9mm (.355")	124 gr.	.131	.141	✓	✓	✓			700- 1000 fps
38 CALIBER BULLETS										
 #3580 BBWC	38 (.358")	148 gr.	.055	.165	✓		✓			700 - 900 fps
 #3582 HBWC	38 (.358")	148 gr.	.047	.165	✓		✓			700 - 900 fps
 #1030 DEWC	38 (.358")	148 gr.	.048	.165	✓		✓			700 - 900 fps
 #3586 RN	38 (.358")	158 gr.	.159	.176	✓	✓	✓			650 - 1100 fps
 #3588 SWC	38 (.358")	158 gr.	.135	.176	✓	✓	✓			650 - 1100 fps

	CAL. / DIA.	WEIGHT	B.C.	S.D.	SELF-DEFENSE	SMALL GAME	MEDIUM GAME	TARGET-MATCH	MET. SILHOUETTE	USEFUL RANGE
 #3589 SWC/HP	38 (.358")	158 gr.	.139	.176	✓	✓		✓		650 - 1100 fps

44 CALIBER BULLETS

 #4430 SWC	44 (.430")	240 gr.	.182	.185	✓	✓		✓		650 - 1100 fps
 #4431 SWC/HP	44 (.430")	240 gr.	.204	.185	✓	✓		✓		650 - 1100 fps

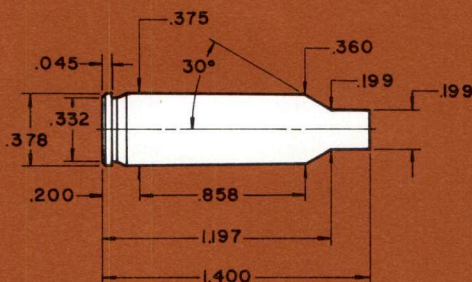
45 CALIBER BULLETS

 #4526 SWC	45 (.452")	200 gr.	.070	.140	✓	✓		✓		650 - 1100 fps
 #4528 L-C/T	45 (.452")	200 gr.	.081	.140	✓	✓		✓		650 - 1100 fps
 #4530 LRN	45 (.452")	230 gr.	.207	.162	✓	✓		✓		650 - 1000 fps

ABBREVIATIONS USED:

BBWC Bevel Base Wadcutter	L Swaged Lead Bullet
BT Boat Tail	LRN Lead Round Nose
C/T Combat Target	RN Round Nose
DEWC Double End Wadcutter	SIL Silhouette
FMJ Full Metal Jacket	SJ Short Jacket
FP Flat Point	SP Spire Point
HBWC Hollow Base Wadcutter	SWC Semi-Wadcutter
HP Hollow Point	SSSP Single Shot (Pistol)
I Interlock Bullet	SX Super Explosive
JFP Jacketed Flat Point	W/C With Cannelure
JHP Jacketed Hollow Point	XTP Extreme Terminal Performance
JTC Jacketed Truncated Cone	

*Rifle
Reloading
Data*



17 MACH IV

RIFLE: REMINGTON MODEL 660
BARREL: 25", 1 in 10" TWIST
CASE: REMINGTON-PETERS
PRIMER: REMINGTON 7½

BULLET DIAMETER: .172"
MAXIMUM C.O.L.: 1.770"
MAX. CASE LENGTH: 1.400"
CASE TRIM LENGTH: 1.390"

Originally introduced by the O'Brien Rifle Company of Las Vegas, Nevada, the 17 Mach IV is based on the necked down 221 Remington Fireball case with the shoulder angle reformed to 30 degrees.

This is the smallest and most efficient 17 caliber cartridge listed in the Hornady manual. In such a small case with a minimum spread in powder charges of approximately 3 grains, uniform measure of powder charges is very critical; a 1/2 grain variation in the powder charge can make as much as 100 fps difference and dramatic changes in pressure. H 4227 gave excellent results in our test rifle. Since the introduction of the 17 Remington, popularity of this cartridge has dropped.

25 GRAIN BULLETS:

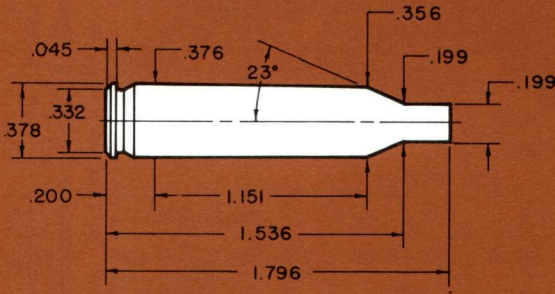
SECTIONAL DENSITY: .121
DIAMETER: .172"

#1710 HP
Ballistic Coefficient — .187
C.O.L. — 1.770"



	VELOCITY					
POWDER	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
2400	11.1 gr.	11.6 gr.	12.1 gr.	12.6 gr.	13.1 gr.	
H4227	11.8 gr.	12.3 gr.	12.9 gr.	13.5 gr.	14.0 gr.	14.6 gr.
H4198		13.6 gr.	14.1 gr.	14.6 gr.	15.1 gr.	15.6 gr.

See Ballistics Tables on pages 10-11, Vol. II



17 REMINGTON

RIFLE: REMINGTON 700
BARREL: 24", 1 in 10" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7½

BULLET DIAMETER: .172"
MAXIMUM C.O.L.: 2.170"
MAX. CASE LENGTH: 1.796"
CASE TRIM LENGTH: 1.785"

Hornady introduced the 17 caliber .172" diameter, 25 grain Hollow Point at the beginning of 17 caliber popularity. In 1971, Remington recognized that the market was ready for a commercial 17 caliber and standardized the 17 Remington. This cartridge is the only 17 ever available in a commercial rifle and loaded ammunition. This factory cartridge quickly dominated the 17 caliber scene, and replaced most of the wildcats such as the 17/222 and 17/223. The 17 is an ideal cartridge for fur and varmint hunters because of minimal pelt damage and the mild report that allows hunting in the more settled areas.

Hornady is still the only major American bullet manufacturer that produces a 17 caliber bullet. The 17 Remington, IMR 4320, and the Hornady 25 grain Hollow Point make an excellent varmint combination.

25 GRAIN BULLETS:

SECTIONAL DENSITY: .121
DIAMETER: .172"

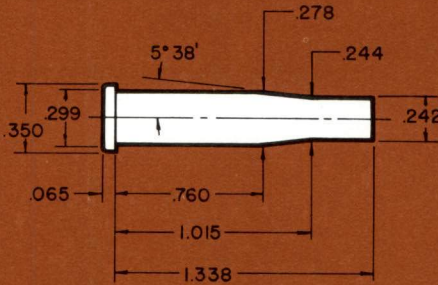
#1710 HP
Ballistic Coefficient — .187
C.O.L. — 2.170"



POWDER	VELOCITY					
	3600 fps	3700 fps	3800 fps	3900 fps	4000 fps	4100 fps
IMR 4198	17.6 gr.	18.4 gr.	19.1 gr.	19.8 gr.		
RL-7	17.8 gr.	18.3 gr.	18.9 gr.	19.5 gr.		
AA 2520	19.7 gr.	20.6 gr.	21.5 gr.	22.5 gr.		
IMR 3031	20.3 gr.	20.9 gr.	21.6 gr.	22.2 gr.		
BL-C2	20.5 gr.	21.2 gr.	21.9 gr.	22.6 gr.		
WIN 748	21.1 gr.	21.9 gr.	22.6 gr.	23.3 gr.		
IMR 4064	21.4 gr.	22.0 gr.	22.5 gr.	23.1 gr.		
IMR 4895	21.9 gr.	22.6 gr.	23.2 gr.	23.8 gr.	24.5 gr.	
H380	22.6 gr.	23.3 gr.	23.9 gr.			
IMR 4320	22.6 gr.	23.1 gr.	23.7 gr.	24.2 gr.	24.7 gr.	25.2 gr.
WIN 760	25.1 gr.	25.8 gr.	26.4 gr.	27.1 gr.	27.7 gr.	

See Ballistics Tables on pages 10-11, Vol. II

Indicates maximum load • use with caution



22 HORNET

RIFLE: RUGER #3
BARREL: 22", 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSR

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 1.723"
MAX. CASE LENGTH: 1.403"
CASE TRIM LENGTH: 1.393"

From the 22 WCF black powder cartridge came the modern smokeless powder version, the 22 Hornet. In 1930 Winchester produced ammunition for the 22 Hornet and in 1932 Savage introduced a bolt action rifle, Model 23-D, for the Hornet, while Winchester followed in 1933 with their Model 54 bolt action. With the 22 Hornet came the era for small bore, high performance cartridges.

The Hornet round makes a fine varmint and small game cartridge in settled areas because of its mild report and fine accuracy. The Hornady 45 grain Spire Point is designed expressly for Hornet velocities and is available in .223" diameter for older rifles, and .224" diameter for the more modern Hornet rifles such as the Ruger #3. Our 50 grain SX bullet also performs very well on varmints. Normally 55 grain bullets do not receive a great deal of consideration for the Hornet because of reduced velocities, but use of the 55 grain FMJ Hornady bullet for table fare is an excellent choice to prevent a great deal of damage to the meat.

With the advent of higher intensity small bore cartridges that followed World War II, the popularity of the 22 Hornet ebbed. In recent years the 22 Hornet has gained renewed interest, with a great deal of credit going to Ruger for chambering the round in its #3 carbine and Thompson Center for chambering it in the popular Contender pistol.

With our test rifle, the powders that gave the most uniform results coupled with the best accuracy were IMR 4227 and Win. 296.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 1.750"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2900 fps
H110	8.4 gr.	8.8 gr.	9.2 gr.	9.7 gr.	10.1 gr.	
2400	8.6 gr.	9.0 gr.	9.3 gr.	9.7 gr.		
WIN 296	8.7 gr.	9.3 gr.	9.9 gr.	10.5 gr.	11.2 gr.	11.8 gr.
IMR 4227	9.8 gr.	10.3 gr.	10.8 gr.	11.3 gr.	11.8 gr.	
WIN 680	10.0 gr.	10.7 gr.	11.3 gr.	11.9 gr.	12.6 gr.	

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP
Ballistic Coefficient — .214
C.O.L. — 1.780"



POWDER	VELOCITY						
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
H110	8.0 gr.	8.5 gr.	9.0 gr.	9.5 gr.			
AA #9	7.7 gr.	8.3 gr.	8.9 gr.	9.5 gr.	10.0 gr.		
2400	8.2 gr.	8.7 gr.	9.2 gr.	9.7 gr.			
WIN 296	8.4 gr.	9.0 gr.	9.7 gr.	10.3 gr.	10.9 gr.	11.6 gr.	12.2 gr.
IMR 4227	9.7 gr.	10.2 gr.	10.7 gr.	11.2 gr.	11.7 gr.		
WIN 680	9.7 gr.	10.3 gr.	10.9 gr.	11.5 gr.	12.1 gr.		

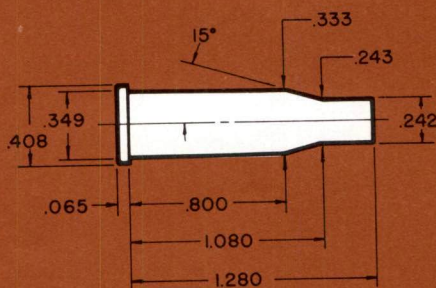
See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution

55 GRAIN BULLETS:**SECTIONAL DENSITY:****.157****DIAMETER:****.224"****#2267 FMJ-BT w/c****Ballistic Coefficient — .243****C.O.L. — 1.780"****22 HORNET**

POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
AA #9	7.5 gr.	8.0 gr.	8.6 gr.	9.1 gr.	
H110	7.6 gr.	8.2 gr.	8.8 gr.	9.4 gr.	
2400	8.2 gr.	8.5 gr.	8.9 gr.		
WIN 296	8.1 gr.	8.7 gr.	9.3 gr.	9.9 gr.	10.4 gr.
IMR 4227	9.1 gr.	9.7 gr.	10.3 gr.	10.8 gr.	
WIN 680	9.5 gr.	10.1 gr.	10.6 gr.	11.1 gr.	11.6 gr.

See Ballistics Tables on pages 25-28, Vol. II *Indicates maximum load - use with caution*



218 BEE

RIFLE: MARLIN 1894 CL
BARREL: 22", 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSR

BULLET DIA.: .222-.224"
MAXIMUM C.O.L.: 1.625"
MAX. CASE LENGTH: 1.345"
CASE TRIM LENGTH: 1.335"

The 218 Bee packs much more sting than its older cousin, the 22 Hornet. Introduced by Winchester in 1938 and received with considerable enthusiasm by performance minded varminters, the 218 Bee has more powder capacity than the Hornet, produces somewhat higher velocities with a broader range of powders, will accommodate heavier bullets (50 and 55 gr.) more easily, and has a slightly longer effective range. Yet the Bee never attained the degree of popularity the Hornet earned.

Winchester originally chambered its Model 65 lever action for this necked-down 25-20 cartridge. While there is nothing inherently inaccurate about the 218 Bee (as performance of the cartridge in good bolt action or single shot rifles will attest), its accuracy potential in the lever action was not all that varminters desired. When, after WWII, Winchester chambered its Model 43 bolt action for the Bee, it still failed to gain great acceptance. However, Browning and Marlin recently introduced excellent lever actions in 218 Bee. As with all tubular magazine fed actions, only flat nosed bullets should be used in the magazine, thus preventing the possibility of an accidental discharge in the magazine. Pointed bullets can be used only in a single shot mode, loaded one by one into the chamber.

Loaded with Hornady 22 caliber bullets, whether the 40 gr. Jet (for lever guns), the 45 gr. Spire Point, or the 50 or 55 gr. SX (Super-explosive), the 218 Bee will produce good results on most varmints out to 150-200 yards. It is neither as flat-shooting nor as potent as the 222 Remington.

40 GRAIN BULLETS:**SECTIONAL DENSITY:****.116****DIAMETER:****.222"****#2210 JET****Ballistic Coefficient — .104****C.O.L. — 1.615"**

POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
2400	9.3 gr.	9.7 gr.	10.1 gr.	10.5 gr.	
H110	9.7 gr.	10.2 gr.	10.6 gr.	11.1 gr.	11.6 gr.
WIN 296	9.8 gr.	10.4 gr.	10.9 gr.	11.5 gr.	12.0 gr.
H4227	10.3 gr.	11.0 gr.	11.7 gr.	12.4 gr.	
WIN 680	10.6 gr.	11.3 gr.	12.0 gr.	12.7 gr.	13.4 gr.
IMR 4227	11.1 gr.	11.7 gr.			
AA 1680	13.3 gr.	13.8 gr.	14.3 gr.	14.7 gr.	
H4198	13.7 gr.	14.1 gr.	14.6 gr.	15.0 gr.	
RL-7	14.2 gr.	14.9 gr.	15.5 gr.	16.2 gr.	

*See Ballistics Tables on pages 11-13, Vol. II***45 GRAIN BULLETS:****SECTIONAL DENSITY:****.128****DIAMETER:****.224"****#2230 HORNET****Ballistic Coefficient — .202****C.O.L. — 1.625"**

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
2400	8.9 gr.	9.5 gr.	10.1 gr.	10.6 gr.	11.2 gr.	11.8 gr.
H110	9.1 gr.	9.8 gr.	10.5 gr.	11.2 gr.	11.9 gr.	12.6 gr.
AA 1680	12.2 gr.	12.7 gr.	13.2 gr.	13.7 gr.	14.1 gr.	14.6 gr.
RL-7	12.5 gr.	13.1 gr.	13.7 gr.	14.2 gr.	14.8 gr.	15.4 gr.
H4198	12.8 gr.	13.4 gr.	13.9 gr.	14.4 gr.		

See Ballistics Tables on pages 13-15, Vol. II
 **Indicates maximum load • use with caution**

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 1.625"



#2245 SP

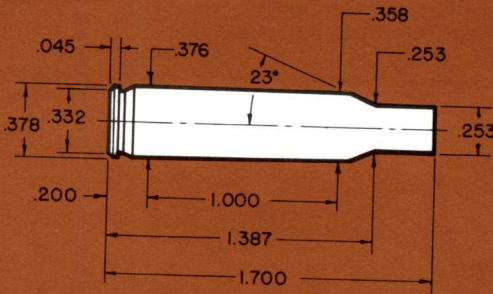
Ballistic Coefficient — .214
C.O.L. — 1.625"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
2400	8.5 gr.	9.1 gr.	9.7 gr.	10.4 gr.		
H110	8.8 gr.	9.4 gr.	10.1 gr.	10.8 gr.	11.5 gr.	
WIN 296		9.8 gr.	10.5 gr.	11.2 gr.	11.9 gr.	
H4227	9.1 gr.	10.0 gr.	10.9 gr.	11.7 gr.	12.6 gr.	
WIN 680	10.1 gr.	10.7 gr.	11.4 gr.	12.0 gr.	12.7 gr.	
IMR 4227	10.7 gr.	11.3 gr.	11.8 gr.	12.4 gr.		
AA 1680	11.9 gr.	12.5 gr.	13.1 gr.	13.7 gr.	14.4 gr.	
RL-7	12.2 gr.	12.9 gr.	13.6 gr.	14.3 gr.	15.0 gr.	15.8 gr.
H4198	12.5 gr.	13.1 gr.	13.6 gr.	14.1 gr.	14.7 gr.	
BL-C2	16.8 gr.	17.7 gr.	18.6 gr.			

See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution



222 REMINGTON

RIFLE: REMINGTON 700
BARREL: 20", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7 $\frac{1}{2}$

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.130"
MAX. CASE LENGTH: 1.700"
CASE TRIM LENGTH: 1.690"

Remington introduced this cartridge in 1950 in the Model 722 and since then, it has been chambered in nearly every action feasible. The 222 is not based on any other cartridge; it is of original design. Its inherent accuracy has accounted for countless varmints and numerous records by the bench rest fraternity. The effective varminting range of the 222 is about 250 yards.

For varmint hunting Hornady SX bullets are the best choice. In 1958 Hornady introduced these ultra-thin jacketed bullets expressly for the purpose of creating the explosiveness found in the larger 22 calibers, but at 222 velocities. The 222 is effective with bullet weights ranging from the 45 grain Hornet to the 60 grain Spire Point. When using the 60 grain Hollow Point in the 222, the shooter should watch carefully to see that these long bullets are stabilizing properly. The 60 grain Hollow Point is intended for use in the faster 22 calibers and many times a 1:14" twist and 3000 fps will not stabilize this long bullet.

The powders that gave the most uniform velocities and best accuracy throughout the range of 22 caliber bullets were IMR 4198 and BL-C2.

45 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.128**
.224"**#2230 HORNET****Ballistic Coefficient — .202**
C.O.L. — 2.130"

POWDER	VELOCITY			
	3000 fps	3100 fps	3200 fps	3300 fps
RL-7	19.7 gr.	20.4 gr.	21.1 gr.	
IMR 4198	21.3 gr.	21.9 gr.	22.6 gr.	
AA 2230	22.0 gr.	22.7 gr.	23.4 gr.	24.1 gr.
H322	22.5 gr.	23.1 gr.	23.7 gr.	24.3 gr.
AA 2460	22.6 gr.	23.4 gr.	24.1 gr.	
H335	23.8 gr.	24.6 gr.	25.3 gr.	26.1 gr.
IMR 4895	24.0 gr.	24.8 gr.		
BL-C2	24.2 gr.	24.9 gr.	25.5 gr.	26.2 gr.
WIN 748	25.0 gr.	25.8 gr.	26.6 gr.	27.3 gr.

See Ballistics Tables on pages 13-15, Vol. II*Indicates maximum load • use with caution*

50 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.142
.224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.130"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.130"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RL-7	19.1 gr.	19.9 gr.			
IMR 4198	19.0 gr.	19.7 gr.	20.3 gr.	21.0 gr.	
AA 2230	21.5 gr.	22.1 gr.	22.7 gr.	23.3 gr.	
H322	21.6 gr.	22.4 gr.	23.1 gr.	23.9 gr.	
H335	23.1 gr.	23.8 gr.	24.6 gr.	25.4 gr.	
AA 2460	22.2 gr.	23.1 gr.	24.0 gr.		
IMR 4895	23.3 gr.	24.0 gr.	24.8 gr.	25.5 gr.	
BL-C2	23.9 gr.	24.6 gr.	25.3 gr.	26.0 gr.	
WIN 748	24.5 gr.	25.2 gr.	25.9 gr.	26.6 gr.	27.4 gr.

See Ballistics Tables on pages 15-18, Vol. II

222 REMINGTON

 Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.148 - .151
.224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.200"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.200"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4198	18.6 gr.	19.3 gr.	19.9 gr.	20.5 gr.	
IMR 3031	21.3 gr.	21.9 gr.	22.6 gr.		
AA 2230	21.0 gr.	21.5 gr.	22.1 gr.	22.6 gr.	
H322	21.1 gr.	21.8 gr.	22.5 gr.		
AA 2460	21.5 gr.	22.3 gr.	23.0 gr.		
H335	22.5 gr.	23.2 gr.	24.0 gr.	24.7 gr.	
IMR 4895	22.8 gr.	23.6 gr.	24.4 gr.	25.1 gr.	
BL-C2	23.4 gr.	24.2 gr.	25.0 gr.	25.8 gr.	
IMR 4320	23.9 gr.	24.6 gr.	25.4 gr.		
WIN 748	24.1 gr.	24.8 gr.	25.5 gr.	26.2 gr.	26.9 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.157**
.224"**#2260 SXSP****Ballistic Coefficient — .235**
C.O.L. — 2.130"**#2265 SP****Ballistic Coefficient — .235**
C.O.L. — 2.130"**#2266 SP w/c****Ballistic Coefficient — .235**
C.O.L. — 2.160"**#2267 FMJ-BT****Ballistic Coefficient — .243**
C.O.L. — 2.160"

POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4198	18.0 gr.	18.6 gr.	19.3 gr.	20.0 gr.	20.6 gr.
AA 2230	20.2 gr.	20.9 gr.	21.6 gr.	22.3 gr.	
IMR 3031	20.6 gr.	21.2 gr.	21.8 gr.	22.4 gr.	
AA 2460	20.7 gr.	21.3 gr.	22.0 gr.	22.7 gr.	
H322	20.8 gr.	21.5 gr.	22.2 gr.		
H335	21.7 gr.	22.5 gr.	23.3 gr.	24.1 gr.	24.9 gr.
IMR 4895	22.1 gr.	22.9 gr.	23.7 gr.	24.6 gr.	25.4 gr.
IMR 4064	22.6 gr.	23.3 gr.	24.0 gr.		
BL-C2	23.8 gr.	24.5 gr.	25.3 gr.		
IMR 4320	23.2 gr.	23.9 gr.	24.6 gr.	25.4 gr.	
WIN 748		24.1 gr.	24.9 gr.	25.7 gr.	26.4 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II **Indicates maximum load • use with caution****222 REMINGTON**

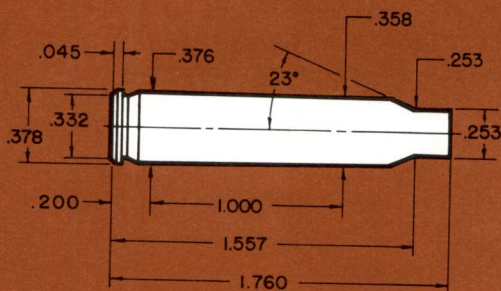
55 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.157**
.224"**#2267 FMJ-BT****Ballistic Coefficient — .243**
C.O.L. — 2.160"**REDUCED LOADS**

POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
SR 4759	11.8 gr.	12.5 gr.	13.2 gr.	14.0 gr.	14.7 gr.
					15.5 gr.

*See Ballistics Tables on pages 25-28, Vol. II***60 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.171**
.224"**#2270 SP****Ballistic Coefficient — .264**
C.O.L. — 2.130"**#2275 HP****Ballistic Coefficient — .271**
C.O.L. — 2.130"

POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4198	17.6 gr.	18.3 gr.	18.9 gr.	19.6 gr.	
AA 2230	19.9 gr.	20.6 gr.	21.4 gr.	22.1 gr.	
IMR 3031	20.1 gr.	20.8 gr.	21.5 gr.	22.1 gr.	
AA 2460	19.9 gr.	20.8 gr.	21.7 gr.		
H322	20.4 gr.	21.1 gr.	21.8 gr.		
H335	21.0 gr.	21.9 gr.	22.8 gr.	23.6 gr.	24.5 gr.
IMR 4895	21.6 gr.	22.3 gr.	23.1 gr.	23.8 gr.	24.5 gr.
IMR 4064	22.1 gr.	22.7 gr.	23.3 gr.		
BL-C2	22.3 gr.	23.1 gr.	23.8 gr.	24.6 gr.	
WIN 748	22.6 gr.	23.4 gr.	24.3 gr.	25.1 gr.	25.9 gr.
IMR 4320	22.6 gr.	23.4 gr.	24.1 gr.	24.8 gr.	

See Ballistics Tables on pages 28-30, 30-33, Vol. II **Indicates maximum load • use with caution**



223 REMINGTON

RIFLE: REMINGTON 700
BARREL: 24", 1 in 12" TWIST
CASE: HORNADY/FRONTIER
PRIMER: REMINGTON 7½

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.260"
MAX. CASE LENGTH: 1.760"
CASE TRIM LENGTH: 1.750"

The 223 Remington began as a military cartridge in 1957 and was later introduced by Remington as a commercial round. The cartridge is now chambered by numerous manufacturers in a variety of firearms. Because military surplus brass is readily available and inexpensive, the 223 is more popular than the 222 Magnum, and its popularity is still growing.

When comparing the 222 Magnum and the 223, the case size appears to be nearly identical. However, the 222 Magnum is about one tenth of an inch longer and holds ½ to 1 grain more powder, 223 cartridges should not be fired in a 222 Magnum as the case dimensions are different and the cases are likely to rupture, possibly causing injury.

The 223 is an excellent choice for varmint hunters and at the time of this writing, the types of commercial actions in which this cartridge is available, ranges from the Ruger Mini-14 semi-automatic to the Remington 40 XB. Couple this wide assortment of firearms with Hornady's superb selection of 22 caliber bullets and the 223 is adequate for any 22 Caliber use.

In our test rifle, the best accuracy and uniformity throughout the range of Hornady bullets was obtained with Win. 748 and IMR 4198. Note: When using a 223 with rapid twist barrels (as in Ruger Mini-14's or Colt's AR-15A2) do not use SX bullets. The rapid twist can cause these fragile bullets to come apart in flight, especially at maximum velocities. *However, the 68 grain BTHP Match bullet requires a fast twist to fully stabilize it in flight. A 1 in 10" twist or faster is required. The 68 grain data was fired in a Colt AR-15A2 with a 1 in 7" twist rate and a 20" barrel.* Also, some manufacturers of semiautomatic firearms recommend the use of a crimped bullet to reduce the chance of the cycling of the action pushing a bullet deeper into the case and accordingly increasing pressures.

45 GRAIN BULLETS:	
SECTIONAL DENSITY:	.128
DIAMETER:	.224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.200"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4198	20.6 gr.	21.3 gr.	22.0 gr.	22.7 gr.	
IMR 3031		23.8 gr.	24.6 gr.	25.5 gr.	
H322	23.3 gr.	23.9 gr.	24.5 gr.	25.1 gr.	
AA 2460	23.9 gr.	24.6 gr.	25.4 gr.	26.1 gr.	26.9 gr.
H335	23.0 gr.	24.0 gr.	25.0 gr.	26.1 gr.	27.1 gr.
BL-C2	24.9 gr.	25.6 gr.	26.3 gr.	27.0 gr.	27.7 gr.
Win 748	25.5 gr.	26.5 gr.	27.5 gr.	28.6 gr.	

See Ballistics Tables on pages 13-15, Vol. II

 Indicates maximum load • use with caution

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.200"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.200"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4198	19.5 gr.	20.2 gr.	20.9 gr.	21.6 gr.	22.2 gr.	
H322	21.9 gr.	22.6 gr.	23.2 gr.	23.9 gr.	24.5 gr.	25.2 gr.
IMR 3031	22.5 gr.	23.2 gr.	23.8 gr.	24.4 gr.	25.1 gr.	25.7 gr.
H335	21.8 gr.	22.7 gr.	23.7 gr.	24.7 gr.	25.7 gr.	
AA 2460	22.4 gr.	23.3 gr.	24.3 gr.	25.2 gr.	26.2 gr.	27.1 gr.
BL-C2	22.9 gr.	23.9 gr.	24.8 gr.	25.8 gr.	26.7 gr.	
IMR 4895	24.3 gr.	25.0 gr.	25.7 gr.	26.3 gr.	27.0 gr.	
WIN 748	24.5 gr.	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.
IMR 4320	25.0 gr.	25.7 gr.	26.5 gr.	27.2 gr.	27.9 gr.	
H380	25.3 gr.	26.2 gr.	27.2 gr.	28.1 gr.	29.0 gr.	

See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.230"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.230"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4198	19.2 gr.	20.1 gr.	21.0 gr.	21.9 gr.		
H322	22.2 gr.	22.9 gr.	23.6 gr.	24.3 gr.	25.0 gr.	
IMR 3031	22.2 gr.	22.9 gr.	23.5 gr.	24.2 gr.	24.8 gr.	25.5 gr.
AA 2460	22.6 gr.	23.5 gr.	24.5 gr.	25.4 gr.	26.3 gr.	27.3 gr.
H335	22.3 gr.	23.3 gr.	24.3 gr.	25.4 gr.		
BL-C2	22.5 gr.	23.5 gr.	24.5 gr.	25.5 gr.	26.5 gr.	27.4 gr.
IMR 4895	24.1 gr.	24.9 gr.	25.6 gr.	26.4 gr.	27.1 gr.	
WIN 748	23.8 gr.	24.8 gr.	25.8 gr.	26.9 gr.	27.9 gr.	28.9 gr.
IMR 4320	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	27.9 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.200"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.200"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.200"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.200"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4198	18.5 gr.	19.4 gr.	20.3 gr.	21.1 gr.		
H322	21.6 gr.	22.2 gr.	22.9 gr.	23.5 gr.	24.1 gr.	
IMR 3031	21.6 gr.	22.3 gr.	22.9 gr.	23.6 gr.	24.3 gr.	25.0 gr.
H335	21.4 gr.	22.4 gr.	23.4 gr.	24.4 gr.	25.4 gr.	
AA 2460	22.0 gr.	22.9 gr.	23.8 gr.	24.7 gr.	25.6 gr.	26.5 gr.
BL-C2	22.1 gr.	23.0 gr.	23.9 gr.	24.9 gr.	25.9 gr.	26.9 gr.
IMR 4895			25.0 gr.	25.9 gr.	26.8 gr.	
WIN 748	23.0 gr.	24.0 gr.	24.9 gr.	25.9 gr.	26.8 gr.	27.7 gr.
IMR 4320	24.0 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

 Indicates maximum load • use with caution

223 REMINGTON

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2267 FMJ-BT w/c
Ballistic Coefficient — .243
C.O.L. — 2.200"



REDUCED LOADS

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR4759	11.3 gr.	12.1 gr.	12.9 gr.	13.7 gr.	14.4 gr.	15.2 gr.

See Ballistics Tables on pages 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.200"



#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.200"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4198	18.1 gr.	19.0 gr.	19.9 gr.	20.8 gr.		
H322	20.9 gr.	21.7 gr.	22.4 gr.	23.1 gr.	23.8 gr.	
IMR 3031	21.2 gr.	22.0 gr.	22.7 gr.	23.5 gr.	24.2 gr.	25.0 gr.
H335	20.8 gr.	21.9 gr.	22.9 gr.	24.0 gr.		
AA 2460	21.0 gr.	22.1 gr.	23.2 gr.	24.2 gr.	25.3 gr.	26.4 gr.
BL-C2	20.5 gr.	21.6 gr.	22.7 gr.	23.7 gr.	24.8 gr.	25.9 gr.
IMR 4064	22.4 gr.	23.2 gr.	24.0 gr.	24.8 gr.	25.6 gr.	
IMR 4895	23.0 gr.	23.8 gr.	24.6 gr.	25.5 gr.	26.3 gr.	27.1 gr.
WIN 748	22.1 gr.	23.2 gr.	24.3 gr.	25.4 gr.	26.5 gr.	
IMR 4320	23.7 gr.	24.5 gr.	25.4 gr.	26.3 gr.		
H380	24.2 gr.	25.3 gr.	26.4 gr.	27.4 gr.		

See Ballistics Tables on pages 28-30, 30-32, Vol. II



Indicates maximum load • use with caution

68 GRAIN BULLETS:

SECTIONAL DENSITY: .194
DIAMETER: .224"

#2278 BTHP MATCH
Ballistic Coefficient — .330
C.O.L. — 2.250"

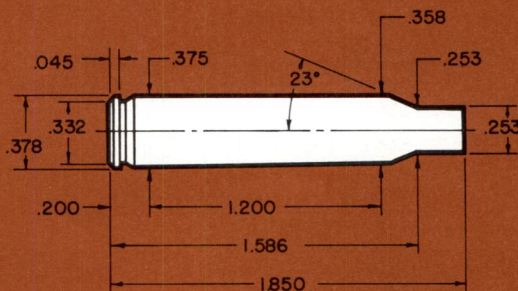


POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H322	20.9 gr.	21.6 gr.	22.3 gr.	23.0 gr.	
H335	20.0 gr.	21.3 gr.	22.6 gr.	23.8 gr.	
AA 2230	20.5 gr.	21.8 gr.	23.0 gr.	24.2 gr.	
IMR 4895	21.9 gr.	22.6 gr.	23.4 gr.	24.2 gr.	24.9 gr.
BL-C2	22.0 gr.	22.9 gr.	23.8 gr.	24.7 gr.	25.6 gr.
WIN 748		23.4 gr.	24.2 gr.	25.0 gr.	25.8 gr.

See Ballistics Tables on pages 33-35, 216-218, Vol. II

This 68 grain bullet data was developed and tested in Colt AR-15A2 with a 20" barrel with a 1 in 7" twist rate. A fast twist rate (i.e., a 1 in 10" twist rate or faster) is necessary to stabilize this bullet.

 Indicates maximum load • use with caution



222 REMINGTON MAGNUM

RIFLE: REMINGTON MODEL 722
BARREL: 26", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: CCI 400

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.325"
MAX. CASE LENGTH: 1.850"
CASE TRIM LENGTH: 1.840"

Between 1955 and 1964, twenty-six new rifle and pistol cartridges were introduced by arms manufacturers to American shooters. Exactly half of them were magnums. The 222 Remington Magnum came on the scene in 1958, along with three other entries in the great magnum race: the 264 Winchester Magnum, 7mm Remington Magnum, and the 460 Weatherby Magnum.

A lengthened version of the 222 Remington, this magnum cartridge was originally an experimental design for the U.S. military (which ultimately adopted a variation known as the 5.56mm NATO or commercially as the 223 Remington). The 222 Remington Magnum has greater case capacity than the 222 and thus somewhat more velocity and range potential. In performance terms it falls midway between the 222 and such venerable cartridges as the 219 Donaldson Wasp and Winchester's 219 Zipper. Top velocities with the 222 magnum, however, fall 300-400 fps below those possible with such high performance 22's as the 22-250 Remington and the 220 Swift.

The advantages of the 222 Remington Magnum over its parent cartridge, the standard 222, are slight. Accuracy is nearly as good and velocity is slightly higher. It has not made sizable inroads into the popularity of the 222. The Magnum does handle heavier bullets somewhat more easily and is thus slightly superior to the 222 when wind is an important factor or when a lot of shooting must be done at ranges from 225 to 275 yards.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 HORNET

Ballistic Coefficient — .202
C.O.L. — 2.290"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	20.0 gr.	20.8 gr.	21.6 gr.	22.3 gr.	23.0 gr.
IMR 3031	23.9 gr.	24.4 gr.	24.9 gr.	25.3 gr.	25.8 gr.
IMR 4064	24.6 gr.	25.2 gr.	25.8 gr.	26.4 gr.	27.0 gr.
BL-C2	24.6 gr.	25.4 gr.	26.2 gr.	27.0 gr.	27.8 gr.
H4895	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.
IMR 4320	25.2 gr.	26.3 gr.	27.3 gr.	28.3 gr.	
H380	26.7 gr.	27.8 gr.	28.9 gr.	29.9 gr.	

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.305"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.305"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
H4198	19.4 gr.	20.3 gr.	21.2 gr.	22.1 gr.	23.0 gr.
IMR 3031	22.9 gr.	23.6 gr.	24.2 gr.	24.9 gr.	25.6 gr.
IMR 4064	23.8 gr.	24.5 gr.	25.1 gr.	25.8 gr.	26.4 gr.
BL-C2	22.6 gr.	23.7 gr.	24.8 gr.	25.8 gr.	26.9 gr.
H4895	24.3 gr.	25.1 gr.	25.8 gr.	26.5 gr.	27.2 gr.
IMR 4320	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	
H380	26.6 gr.	27.6 gr.	28.5 gr.	29.5 gr.	30.5 gr.

See Ballistics Tables on pages 15-18, Vol. II

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:	.148 - .151
DIAMETER:	.224"

#2249 BTHP MATCH**Ballistic Coefficient — .229****C.O.L. — 2.325"****#2250 HP MATCH****Ballistic Coefficient — .218****C.O.L. — 2.325"***See Ballistics Tables on pages 18-20, 20-23, Vol. II**Note: The data for 55 grain bullets should be used for loading the 52 and 53 grain bullets.***55 GRAIN BULLETS:**

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2260 SXSP**Ballistic Coefficient — .235****C.O.L. — 2.325"****#2265 SP****Ballistic Coefficient — .235****C.O.L. — 2.325"****2266 SP w/c****Ballistic Coefficient — .235****C.O.L. — 2.325"****#2267 FMJ-BT w/c****Ballistic Coefficient — .243****C.O.L. — 2.325"**

POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	19.1 gr.	20.1 gr.	21.0 gr.	22.0 gr.	
IMR 3031	22.3 gr.	23.1 gr.	23.9 gr.	24.7 gr.	25.5 gr.
IMR 4064	24.2 gr.	24.7 gr.	25.2 gr.	25.7 gr.	26.2 gr.
BL-C2	22.2 gr.	23.3 gr.	24.4 gr.	25.6 gr.	26.7 gr.
H4895	23.8 gr.	24.4 gr.	25.0 gr.	25.6 gr.	26.2 gr.
IMR 4320	25.0 gr.	25.7 gr.	26.4 gr.	27.1 gr.	
H380			27.1 gr.	28.4 gr.	29.7 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

60 GRAIN BULLETS:

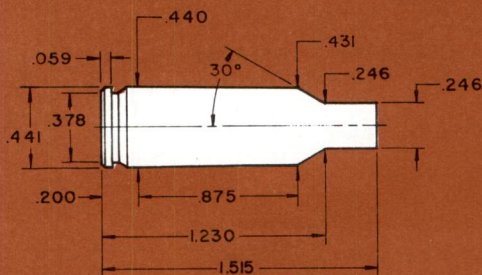
SECTIONAL DENSITY:	.171
DIAMETER:	.224"

#2270 SP**Ballistic Coefficient — .264****C.O.L. — 2.310"****#2275 HP****Ballistic Coefficient — .271****C.O.L. — 2.310"**

POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H4198		20.2 gr.	20.8 gr.	21.4 gr.	22.0 gr.
IMR 3031	22.4 gr.	23.0 gr.	23.6 gr.	24.3 gr.	25.0 gr.
IMR 4064	23.7 gr.	24.3 gr.	24.9 gr.	25.4 gr.	26.0 gr.
BL-C2	22.2 gr.	23.2 gr.	24.2 gr.	25.2 gr.	26.2 gr.
H4895	23.2 gr.	24.0 gr.	24.7 gr.	25.4 gr.	26.2 gr.
IMR 4320		24.9 gr.	25.7 gr.	26.4 gr.	
H380		24.9 gr.	26.3 gr.	27.7 gr.	29.2 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

 Indicates maximum load • use with caution



22 PPC

RIFLE: WICHITA MINI
BARREL: 24", 1 in 14" TWIST
CASE: SAKO REFORMED
PRIMER: REMINGTON 7½

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.065"
MAX. CASE LENGTH: 1.515"
CASE TRIM LENGTH: 1.505"

The 22 PPC cartridge was designed by Dr. Louis Palmasano and Ferris Pindell in 1974. The intention was to design an extremely efficient bench rest cartridge. The cartridge is based on the 220 Russian case which has a smaller head size than the 308 and features a small rifle primer, which allegedly enhances accuracy. The fact that the PPC cartridges are steadily winning bench rest matches across the country supports the theory of efficient case structure. Also, many bench rest shooters are using the 6mm PPC and are enjoying equal success.

Our particular test rifle was built by Ferris Pindell and when tested, gave very fine results. All the powders listed performed admirably, but IMR 4198 showed the best uniformity from shot to shot, and also produced the best accuracy. With the Hornady 53 grain Match Hollow Point and the 52 grain Match Boat Tail Hollow Point, five shot groups measuring .250" or less were easily obtained, if the shooter did his part.

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:	.148 - .151
DIAMETER:	.224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.065"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.065"

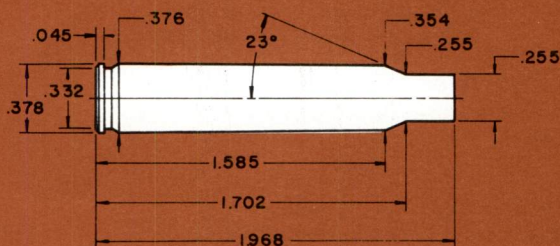


POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4198	20.8 gr.	21.6 gr.	22.3 gr.	23.1 gr.	23.8 gr.
RL-7	21.2 gr.	22.0 gr.	22.9 gr.		
H322	24.4 gr.	25.1 gr.	25.9 gr.	26.6 gr.	
BL-C2	26.0 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.0 gr.
WIN748	26.7 gr.	27.5 gr.	28.2 gr.	28.9 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution



5.6 X 50mm MAGNUM

RIFLE: KRICO
BARREL: (23⁵/₈"), 1 in 13" TWIST
CASE: RWS
PRIMER: FEDERAL 205

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.400"
MAX. CASE LENGTH: 1.968"
CASE TRIM LENGTH: 1.958"

The 5.6 X 50 Magnum evolved from a rimmed version of the 222 Magnum (5.6 x 47R) developed in 1966 and 1967 by DWM. In 1968, DWM working with gunmaker Friedrich Wilhelm Heym, developed and introduced the 5.6 X 50R Magnum. This cartridge, .118 inches longer than the 222 Magnum, provided greater powder capacity and better down range energy. The primary reason for the development of the cartridge was to have a 22 caliber capable of enough remaining energy at 200 meters to legally take the small European red deer. The rimmed version was the first introduced because of the popularity of break open guns for hunting in Europe. In 1970 the rimless version was introduced for bolt action rifles.

In the U.S. the 5.6 X 50 Magnum is better suited as a varmint type cartridge. For this purpose, Hornady offers the 50 and 55 grain SX (Super Explosive) bullets. Add to this the rest of the 22 caliber Hornady bullets and the 5.6 X 50 Magnum is an excellent small game and varmint round.

The powders that performed best in our test weapon were IMR 4064 and Win. 748. Best accuracy was obtained using IMR 4064 with Win. 748 achieving the highest velocities of those powders tested.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 HORNET

Ballistic Coefficient — .202
C.O.L. — 2.400"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	25.0 gr.	25.6 gr.	26.1 gr.	26.6 gr.	
IMR 4064	26.2 gr.	26.8 gr.	27.4 gr.	28.0 gr.	
WIN 748	26.4 gr.	27.2 gr.	28.0 gr.	28.7 gr.	29.5 gr.

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.400"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.400"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	25.1 gr.	25.7 gr.	26.3 gr.	26.8 gr.	
IMR 4064	26.2 gr.	26.8 gr.	27.5 gr.	28.1 gr.	
WIN 748	26.4 gr.	27.2 gr.	28.1 gr.	28.9 gr.	29.8 gr.

See Ballistics Tables on pages 15-18, Vol. II

5.6 X 50mm MAGNUM



Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:	.148 - .151
DIAMETER:	.224"

#2249 BTHP MATCH
Ballistic Coefficient — .229
C.O.L. — 2.400"



#2250 HP MATCH
Ballistic Coefficient — .216
C.O.L. — 2.400"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	23.7 gr.	24.3 gr.	24.9 gr.	25.5 gr.	
IMR 4064	24.7 gr.	25.4 gr.	26.1 gr.	26.8 gr.	27.5 gr.
WIN 748	24.8 gr.	25.7 gr.	26.7 gr.	27.7 gr.	28.6 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II

55 GRAIN BULLETS:

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2260 SXSP
Ballistics Coefficient — .235
C.O.L. — 2.400"



#2265 SP
Ballistic Coefficient — .235
C.O.L. — 2.400"



#2266 SP w/c
Ballistic Coefficient — .235
C.O.L. — 2.400"



2267 FMJ-BT w/c
Ballistic Coefficient — .243
C.O.L. — 2.400"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	23.7 gr.	24.3 gr.	24.9 gr.	25.5 gr.	
IMR 4064	24.7 gr.	25.4 gr.	26.1 gr.	26.8 gr.	27.5 gr.
WIN 748	24.8 gr.	25.7 gr.	26.7 gr.	27.7 gr.	28.6 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY:	.171
DIAMETER:	.224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.400"



#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.400"



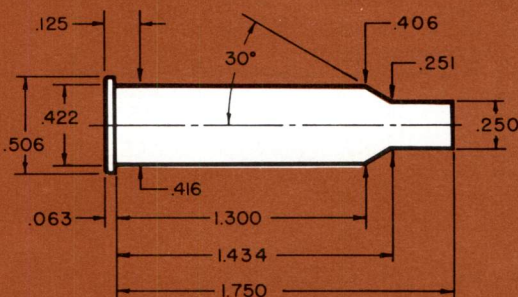
POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	23.6 gr.	24.2 gr.	24.9 gr.	25.5 gr.	
IMR 4064	24.9 gr.	25.6 gr.	26.4 gr.	27.1 gr.	27.8 gr.
WIN 748	25.2 gr.	26.1 gr.	27.0 gr.	27.8 gr.	28.7 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

5.6 X 50mm MAGNUM



Indicates maximum load • use with caution



219 DONALDSON WASP

RIFLE: CUSTOM MAUSER M 98
BARREL: 29", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.210"
MAX. CASE LENGTH: 1.813"
CASE TRIM LENGTH: 1.800"

The 219 Donaldson Wasp might be described as a sharper-shouldered blown-out 219 Zipper, for that case has most often been used to form brass for this early 'forties wildcat. Wasp cases, however, have also been made from 25-35, 30-30, and 22 High Power brass as well; and rimless versions of the Wasp have been made from 25 or 30 Remington rimless cases.

The Wasp reached its final form about 1941 after five to six years of experimenting by Harvey Donaldson, a well known shooter and wildcatter. Early in its career the cartridge was used to win a number of important matches, and word of its accuracy — and long-range performance on varmints — helped it attract a respectable following in the 1940's.

Chambered in a good bolt action or single shot the Wasp is an accurate and deadly performer, and therein lay its advantage over the factory produced 219 Zipper. Zippers were chambered in lever actions which just couldn't shoot as effectively. As a comparison of loading data for both cartridges will indicate, ballistic performance of the pair is nearly identical.

When the 222 Remington appeared in 1950, a great many Wasp fanciers decided they'd rather spend more time shooting than forming cases, and the wildcat started into a decline from which it's never recovered. The sting is still in the Wasp, though, and with a good rifle it remains worth reloading. Note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.210"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198		22.1 gr.	22.9 gr.	23.7 gr.	24.5 gr.
IMR 3031	24.8 gr.	25.4 gr.	26.1 gr.	26.7 gr.	27.3 gr.
IMR 4064	26.3 gr.	27.0 gr.	27.6 gr.	28.2 gr.	28.8 gr.
H4895		27.1 gr.	27.7 gr.	28.2 gr.	28.8 gr.
IMR 4320	26.8 gr.	27.4 gr.	28.0 gr.	28.7 gr.	29.3 gr.
BL-C2	26.9 gr.	27.5 gr.	28.2 gr.	28.8 gr.	
H380	28.7 gr.	29.4 gr.	30.2 gr.	30.9 gr.	31.6 gr.

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP
Ballistic Coefficient — .214
C.O.L. — 2.200"



#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.200"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	21.3 gr.	22.0 gr.	22.8 gr.	23.5 gr.	24.2 gr.	
IMR 3031	24.0 gr.	24.7 gr.	25.5 gr.	26.3 gr.	27.0 gr.	27.8 gr.
IMR 4064	26.0 gr.	26.7 gr.	27.4 gr.	28.1 gr.	28.8 gr.	29.5 gr.
H4895	26.0 gr.	26.7 gr.	27.4 gr.	28.2 gr.	28.9 gr.	29.7 gr.
BL-C2		26.8 gr.	27.7 gr.	28.6 gr.		
IMR 4320	26.5 gr.	27.2 gr.	28.0 gr.	28.8 gr.	29.6 gr.	30.4 gr.
H380	28.2 gr.	29.2 gr.	30.2 gr.	31.2 gr.	32.2 gr.	

See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.205"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.205"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.0 gr.	21.8 gr.	22.5 gr.	23.3 gr.	24.0 gr.	
IMR 3031	23.6 gr.	24.3 gr.	25.1 gr.	25.8 gr.	26.6 gr.	27.3 gr.
IMR 4064		26.0 gr.	26.7 gr.	27.5 gr.	28.2 gr.	28.9 gr.
H4895	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.1 gr.
BL-C2	25.0 gr.	25.9 gr.	26.9 gr.	27.8 gr.	28.8 gr.	
IMR 4320	25.7 gr.	26.6 gr.	27.4 gr.	28.2 gr.	29.1 gr.	29.9 gr.
H380	27.7 gr.	28.7 gr.	29.7 gr.	30.7 gr.	31.7 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.205"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.205"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.205"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.205"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.0 gr.	21.8 gr.	22.5 gr.	23.3 gr.	24.0 gr.	
IMR 3031	23.6 gr.	24.3 gr.	25.1 gr.	25.8 gr.	26.6 gr.	27.3 gr.
IMR 4064		26.0 gr.	26.7 gr.	27.5 gr.	28.2 gr.	28.9 gr.
H4895	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.1 gr.
BL-C2	25.0 gr.	25.9 gr.	26.9 gr.	27.8 gr.	28.8 gr.	
IMR 4320	25.7 gr.	26.6 gr.	27.4 gr.	28.2 gr.	29.1 gr.	29.9 gr.
H380	27.7 gr.	28.7 gr.	29.7 gr.	30.7 gr.	31.7 gr.	

See Ballistics Tables on pages 23-25, 25-28, Vol. II

Indicates maximum load • use with caution

60 GRAIN BULLETS:

SECTIONAL DENSITY:	.171
DIAMETER:	.224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.195"



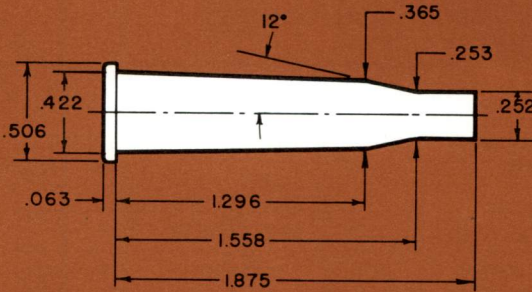
#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.195"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	21.0 gr.	21.8 gr.	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.
IMR 3031	23.6 gr.	24.3 gr.	25.0 gr.	25.8 gr.	26.5 gr.	27.2 gr.
IMR 4064	23.8 gr.	24.5 gr.	25.2 gr.	25.9 gr.	26.6 gr.	27.3 gr.
H4895	24.9 gr.	25.7 gr.	26.5 gr.	27.3 gr.	28.0 gr.	28.8 gr.
IMR 4320	25.3 gr.	26.1 gr.	26.8 gr.	27.5 gr.	28.3 gr.	29.0 gr.
BL-C2	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.2 gr.
H380	25.8 gr.	26.8 gr.	27.9 gr.	28.9 gr.	30.0 gr.	31.0 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

 Indicates maximum load • use with caution



219 ZIPPER

RIFLE: F.N. MAUSER CUSTOM
BARREL: 27", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: RWS

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.410"
MAX. CASE LENGTH: 1.938"
CASE TRIM LENGTH: 1.928"

Winchester introduced the 219 Zipper in 1937, seven years after the Hornet and two years after the powerful 220 Swift. Chambered in the firm's Model 64 lever action varmint version of the famous Model 94, it never delivered the tack-driving accuracy customers demanded, and consequently never became widely popular.

Winchester discontinued manufacturing the Model 64 after WWII and the 219 Zipper became an orphan in 1961 when Marlin stopped chambering its Model 336 for the cartridge. The Zipper is now completely a handloading proposition since both Remington and Winchester have discontinued producing ammunition.

A necked down 25-35 WCF (which can also be formed from 30-30 brass), the 219 Zipper was and is a ballistically respectable performer. Top velocities possible with the cartridge are only 100 fps lower than those which can be developed in the 224 Weatherby Varmintmaster. Note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight.

The Hornady 53 gr. Hollow Point or the 55 gr. Spire Point are outstanding choices for reloading the 219 Zipper and the cartridge is large enough to propel the wind-bucking Hornady 60 gr. Spire Point, or Hollow Point, heaviest 22's in the line, up to an impressive 3300 fps. 4320 is a very good powder choice throughout the entire range of available bullet weights and especially with the heavier selections.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.385"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	22.0 gr.	22.7 gr.	23.5 gr.	24.2 gr.	24.9 gr.
IMR 3031	24.8 gr.	25.6 gr.	26.3 gr.	27.0 gr.	27.8 gr.
BL-C2	25.7 gr.	26.5 gr.	27.4 gr.	28.2 gr.	29.1 gr.
H4895	26.7 gr.	27.4 gr.	28.2 gr.	28.9 gr.	29.6 gr.
IMR 4064	26.7 gr.	27.5 gr.	28.2 gr.		
IMR 4320	27.2 gr.	28.0 gr.	28.7 gr.	29.5 gr.	30.2 gr.
H380	28.6 gr.	29.6 gr.	30.6 gr.	31.6 gr.	

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP
Ballistic Coefficient — .214
C.O.L. — 2.390"



#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.390"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	21.8 gr.	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.	
IMR 3031	24.5 gr.	25.3 gr.	26.1 gr.	26.8 gr.	27.6 gr.	28.4 gr.
BL-C2	25.8 gr.	26.6 gr.	27.3 gr.	28.1 gr.		
IMR 4064	26.2 gr.	26.9 gr.	27.6 gr.	28.3 gr.	29.0 gr.	
H4895	26.0 gr.	26.9 gr.	27.7 gr.	28.5 gr.	29.4 gr.	30.2 gr.
IMR 4320	26.8 gr.	27.6 gr.	28.3 gr.	29.1 gr.	29.9 gr.	30.6 gr.
H380	28.2 gr.	29.2 gr.	30.1 gr.	31.1 gr.	32.0 gr.	

See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.410"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.410"



219 ZIPPER

POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.2 gr.	22.0 gr.	22.8 gr.	23.7 gr.	24.5 gr.	
IMR 3031	24.0 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	
BL-C2	24.8 gr.	25.7 gr.	26.5 gr.	27.3 gr.	28.2 gr.	
H4895	25.0 gr.	25.9 gr.	26.8 gr.	27.7 gr.	28.6 gr.	29.5 gr.
IMR 4064	25.2 gr.	26.0 gr.	26.9 gr.	27.7 gr.		
IMR 4320	25.9 gr.	26.8 gr.	27.6 gr.	28.5 gr.	29.4 gr.	30.2 gr.
H380	27.2 gr.	28.2 gr.	29.3 gr.	30.3 gr.		

See Ballistics Tables on pages 18-20, 20-22, Vol. II

Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.410"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.410"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.410"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.410"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.2 gr.	22.0 gr.	22.8 gr.	23.7 gr.	24.5 gr.	
IMR 3031	24.0 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	
BL-C2	24.8 gr.	25.7 gr.	26.5 gr.	27.3 gr.	28.2 gr.	
H4895	25.0 gr.	25.9 gr.	26.8 gr.	27.7 gr.	28.6 gr.	29.5 gr.
IMR 4064	25.2 gr.	26.0 gr.	26.9 gr.	27.7 gr.		
IMR 4320	25.9 gr.	26.8 gr.	27.6 gr.	28.5 gr.	29.4 gr.	30.2 gr.
H380	27.2 gr.	28.2 gr.	29.3 gr.	30.3 gr.		

See Ballistics Tables on pages 23-25, 25-28, Vol. II



Indicates maximum load • use with caution

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.410"



#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.410"

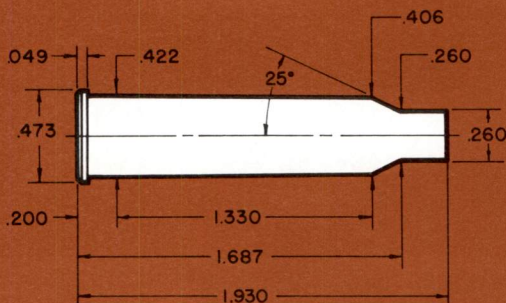


219 ZIPPER

POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	20.1 gr.	20.9 gr.	21.8 gr.	22.6 gr.	23.5 gr.	
IMR 3031	22.3 gr.	23.2 gr.	24.1 gr.	24.9 gr.	25.8 gr.	
BL-C2	23.2 gr.	24.1 gr.	24.9 gr.	25.8 gr.	26.6 gr.	
H4895	23.9 gr.	24.8 gr.	25.6 gr.	26.5 gr.	27.4 gr.	
IMR 4064	24.0 gr.	24.9 gr.	25.8 gr.	26.6 gr.	27.5 gr.	28.3 gr.
IMR 4320	24.8 gr.	25.7 gr.	26.6 gr.	27.5 gr.	28.4 gr.	29.4 gr.
H380	25.6 gr.	26.7 gr.	27.8 gr.	28.9 gr.	30.0 gr.	31.1 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

Indicates maximum load • use with caution



225 WINCHESTER

RIFLE: WINCHESTER M 70 VARMINIT	BULLET DIAMETER: .224"
BARREL: 24", 1 in 14" TWIST	MAXIMUM C.O.L.: 2.425"
CASE: WINCHESTER	MAX. CASE LENGTH: 1.930"
PRIMER: WINCHESTER WLR	CASE TRIM LENGTH: 1.920"

After the 6 mm's gained a foothold as dual purpose varminting/hunting cartridges, the popularity of the 220 Swift declined seriously and Winchester ceased chambering the round in its factory rifles. Not to be left without a high performance entry in 22 caliber, however, it introduced a replacement for the Swift in 1964; the 225 Winchester.

Less potent than the 220 Swift whose place it preempted in the Model 70, the case of the 225 Winchester is termed "semi-rimmed", a design which makes it quite adaptable to single shot actions. The cartridge nevertheless headspaces on the shoulder in the fashion of rimless cases.

Over the 15 year period beginning in 1950, 22 caliber was the scene of intense development activity and considerable jockeying for position among the arms companies. Remington introduced the 222, 222 Magnum, 223, and 221 cartridges in its line-up; Winchester, which had formerly led the development of 22 caliber varmint cartridges, saw old favorites wither and die. Its 225 came on the scene just as Weatherby entered the fray and as Remington began commercial production of the 22-250, a cartridge rivaling the Swift in performance. Although an excellent cartridge, it has not become popular and currently no large firearms company chambers a rifle for it.

Note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight.

45 GRAIN BULLETS:**SECTIONAL DENSITY:****.128****DIAMETER:****.224"****#2230 Hornet****Ballistic Coefficient — .202****C.O.L. — 2.425"**

POWDER	VELOCITY			
	3400 fps	3500 fps	3600 fps	3700 fps
H4198	25.4 gr.	26.4 gr.	27.4 gr.	
IMR 3031	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.
IMR 4064	31.4 gr.	32.0 gr.	32.6 gr.	33.1 gr.
WIN 748		31.4 gr.	32.6 gr.	33.9 gr.
H4895	31.6 gr.	32.2 gr.	32.8 gr.	33.4 gr.
BL-C2	30.7 gr.	31.9 gr.	33.1 gr.	
IMR 4320	31.3 gr.	32.2 gr.	33.2 gr.	34.1 gr.
H380	33.6 gr.	34.4 gr.	35.2 gr.	36.0 gr.
WIN 760	36.1 gr.	37.1 gr.	38.0 gr.	39.0 gr.

*See Ballistics Tables on pages 13-15, Vol. II***50 GRAIN BULLETS:****SECTIONAL DENSITY:****.142****DIAMETER:****.224"****#2245 SP****Ballistic Coefficient — .214****C.O.L. — 2.420"**

POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4198	26.4 gr.	27.3 gr.	28.2 gr.	29.1 gr.		
IMR 3031	29.0 gr.	29.8 gr.	30.5 gr.	31.2 gr.	32.0 gr.	32.7 gr.
IMR 4064	30.6 gr.	31.4 gr.	32.2 gr.	33.0 gr.	33.7 gr.	34.5 gr.
H4895	30.9 gr.	31.7 gr.	32.4 gr.	33.2 gr.	34.0 gr.	34.8 gr.
BL-C2		30.4 gr.	32.1 gr.	33.8 gr.		
IMR 4320	30.8 gr.	31.8 gr.	32.7 gr.	33.7 gr.	34.6 gr.	
WIN 748		32.8 gr.	33.9 gr.	34.9 gr.	36.0 gr.	
H380	32.9 gr.	34.0 gr.	35.9 gr.	36.1 gr.	37.1 gr.	
WIN 760		36.3 gr.	37.4 gr.	38.4 gr.	39.5 gr.	

See Ballistics Tables on pages 15-18, Vol. II

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.148 - .151
.224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.420"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.420"



POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4198	26.1 gr.	27.0 gr.	27.9 gr.	28.8 gr.		
IMR 3031	28.5 gr.	29.3 gr.	30.0 gr.	30.8 gr.	31.6 gr.	
IMR 4064	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	32.9 gr.	33.7 gr.
H4895	30.0 gr.	30.8 gr.	31.7 gr.	32.5 gr.	33.4 gr.	34.2 gr.
BL-C2		29.8 gr.	31.1 gr.	32.3 gr.	33.5 gr.	
IMR 4320	29.6 gr.	30.7 gr.	31.8 gr.	32.9 gr.	34.9 gr.	35.1 gr.
WIN 748		32.5 gr.	33.5 gr.	34.6 gr.	35.6 gr.	
H380	32.0 gr.	33.1 gr.	34.2 gr.	35.2 gr.	36.3 gr.	
WIN 760	35.6 gr.	36.4 gr.	37.1 gr.	37.8 gr.		

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.157
.224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.420"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.420"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.420"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.420"



POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4198	26.1 gr.	27.0 gr.	27.9 gr.	28.8 gr.		
IMR 3031	28.5 gr.	29.3 gr.	30.0 gr.	30.8 gr.	31.6 gr.	
IMR 4064	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	32.9 gr.	33.7 gr.
H4895	30.0 gr.	30.8 gr.	31.7 gr.	32.5 gr.	33.4 gr.	34.2 gr.
BL-C2		29.8 gr.	31.1 gr.	32.3 gr.	33.5 gr.	
IMR 4320	29.6 gr.	30.7 gr.	31.8 gr.	32.9 gr.	34.0 gr.	35.1 gr.
WIN 748		32.5 gr.	33.5 gr.	34.6 gr.	35.6 gr.	
H380	32.0 gr.	33.1 gr.	34.2 gr.	35.2 gr.	36.3 gr.	
WIN 760	35.6 gr.	36.4 gr.	37.1 gr.	37.8 gr.		

See Ballistics Tables on pages 23-25, 25-28, Vol. II



Indicates maximum load • use with caution

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP

Ballistic Coefficient — .264

C.O.L. — 2.410"



#2275 HP

Ballistic Coefficient — .271

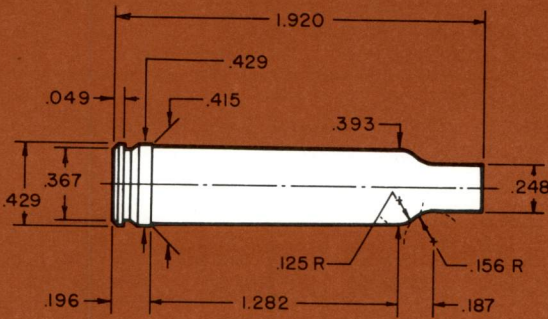
C.O.L. — 2.410"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	25.0 gr.	26.0 gr.	27.0 gr.			
IMR 3031	27.5 gr.	28.3 gr.	29.0 gr.	29.8 gr.	30.6 gr.	
IMR 4064	29.0 gr.	29.7 gr.	30.4 gr.	31.1 gr.	31.8 gr.	
H4895	28.8 gr.	29.6 gr.	30.5 gr.	31.3 gr.	32.2 gr.	33.0 gr.
BL-C2	28.3 gr.	29.5 gr.	30.6 gr.	31.8 gr.		
IMR 4320	29.3 gr.	30.0 gr.	30.8 gr.	31.5 gr.	32.2 gr.	
WIN 748	30.1 gr.	31.1 gr.	32.1 gr.	33.1 gr.	34.2 gr.	35.2 gr.
H380	31.0 gr.	32.0 gr.	33.0 gr.	34.0 gr.	35.0 gr.	
WIN 760	33.8 gr.	34.8 gr.	35.7 gr.	36.7 gr.	37.6 gr.	

See Ballistics Tables on pages 28-30, 30-33, Vol. II

 Indicates maximum load • use with caution



224 WEATHERBY MAGNUM

RIFLE: WEATHERBY
BARREL: 26", 1 in 14" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 210

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.375"
MAX. CASE LENGTH: 1.920"
CASE TRIM LENGTH: 1.910"

The 224 Weatherby made its debut in 1963 in a scaled down Mark V action. This cartridge rounds out the complete line of Weatherby Magnums. The cartridge is capable of .22-250 Remington ballistics and is one of the better high performance varmint rounds commercially available. However, it would be a more popular varmint round if it was based on a conventional case instead of a belted case.

As is readily noticeable, the data for the 45 grain Spire Point shows lower maximum velocity than the 50 grain Spire Point. The 45 grain bullet was designed expressly for 22 Hornet velocities, and consequently, with the jacket construction being very thin, the 45 grain Spire Point comes apart or keyholes when fired at velocities exceeding 3600 fps. Also note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight.

When loading for any of the Weatherby cartridges, accuracy can sometimes be improved by seating the bullet farther out of the case. Most Weatherbys incorporate a great deal of freebore and by seating the bullet closer to the rifling, the bullet has less chance of yawing before engaging the rifling, thus accuracy improves. IMR 3031 and 4064 showed excellent shot to shot uniformity.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.375"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
RL-7	24.9 gr.	25.6 gr.	26.3 gr.	26.9 gr.	27.6 gr.
IMR 3031	27.2 gr.	27.8 gr.	28.5 gr.	29.1 gr.	29.8 gr.
IMR 4895	28.1 gr.	28.8 gr.	29.5 gr.	30.2 gr.	30.9 gr.
H335	28.3 gr.	29.0 gr.	29.8 gr.	30.6 gr.	31.3 gr.
IMR 4064	29.0 gr.	29.6 gr.	30.1 gr.	30.7 gr.	31.3 gr.
WIN 760	32.4 gr.	33.3 gr.	34.2 gr.	35.1 gr.	36.1 gr.

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.375"



POWDER	VELOCITY						
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
RL-7	25.8 gr.	26.6 gr.	27.3 gr.	28.1 gr.	28.9 gr.	29.6 gr.	
IMR 3031	28.0 gr.	28.8 gr.	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.	
IMR 4895	28.7 gr.	29.5 gr.	30.4 gr.	31.3 gr.	32.1 gr.	33.0 gr.	
H335	29.3 gr.	30.1 gr.	31.0 gr.	31.9 gr.	32.7 gr.	33.6 gr.	34.5 gr.
IMR 4064	29.6 gr.	30.2 gr.	30.9 gr.	31.5 gr.	32.1 gr.	32.8 gr.	
WIN 748	31.6 gr.	32.2 gr.	32.9 gr.	33.6 gr.	34.2 gr.	34.9 gr.	35.6 gr.
WIN 760	33.6 gr.	34.7 gr.	35.8 gr.	36.9 gr.	38.0 gr.		

See Ballistics Tables on pages 15-18, Vol. II

 Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP MATCH
Ballistic Coefficient — .229
C.O.L. — 2.375"



#2250 HP MATCH
Ballistic Coefficient — .218
C.O.L. — 2.375"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
RL-7	25.0 gr.	25.9 gr.	26.7 gr.	27.6 gr.	
IMR 3031	28.2 gr.	28.9 gr.	29.6 gr.	30.3 gr.	31.0 gr.
IMR 4895	28.7 gr.	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.
IMR 4064	28.8 gr.	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.
H335	29.1 gr.	29.9 gr.	30.8 gr.	31.6 gr.	
WIN 748	30.7 gr.	31.5 gr.	32.2 gr.	33.0 gr.	33.8 gr.
WIN 760	33.1 gr.	34.2 gr.	35.3 gr.	36.4 gr.	37.5 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II

55 GRAIN BULLETS:

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.375"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.375"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.O. — 2.375"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.375"



POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
RL-7	25.0 gr.	25.9 gr.	26.7 gr.	27.6 gr.	28.4 gr.	
IMR 3031	28.2 gr.	28.9 gr.	29.6 gr.	30.3 gr.	31.0 gr.	31.7 gr.
IMR 4895	28.7 gr.	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.	32.7 gr.
IMR 4064	28.8 gr.	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	32.9 gr.
H335	29.1 gr.	29.9 gr.	30.8 gr.	31.6 gr.	32.4 gr.	
WIN 748	30.7 gr.	31.5 gr.	32.2 gr.	33.0 gr.	33.8 gr.	34.5 gr.
WIN 760	33.1 gr.	34.2 gr.	35.3 gr.	36.4 gr.	37.5 gr.	38.6 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

55 GRAIN BULLETS:

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.350"



REDUCED LOAD

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4227	13.4 gr.	14.2 gr.	15.0 gr.	15.9 gr.	16.7 gr.	17.6 gr.

See Ballistics Tables on pages 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP

Ballistic Coefficient — .264
C.O.L. — 2.375"



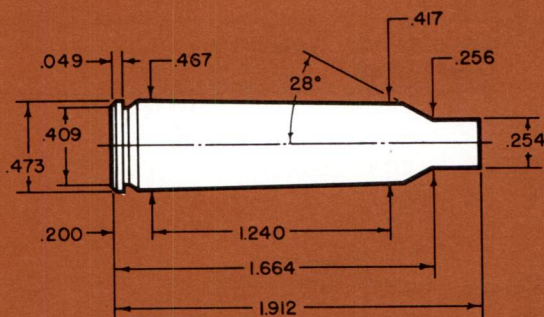
#2275 HP

Ballistic Coefficient — .271
C.O.L. — 2.375"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
RL-7	24.5 gr.	25.4 gr.	26.4 gr.	27.3 gr.	28.2 gr.	
IMR 3031	27.3 gr.	28.1 gr.	28.9 gr.	29.6 gr.	30.4 gr.	
IMR 4895	27.8 gr.	28.7 gr.	29.6 gr.	30.6 gr.	31.5 gr.	32.4 gr.
IMR 4064	28.1 gr.	28.9 gr.	29.7 gr.	30.5 gr.	31.3 gr.	32.1 gr.
H335	28.4 gr.	29.2 gr.	30.1 gr.	31.0 gr.	31.9 gr.	
WIN 748	30.3 gr.	31.1 gr.	31.8 gr.	32.6 gr.	33.4 gr.	
WIN 760	32.5 gr.	33.6 gr.	34.7 gr.	36.9 gr.	38.0 gr.	

See Ballistics Tables on pages 28-30, 30-33, Vol. II



22-250 REMINGTON

RIFLE: REMINGTON 700
BARREL: 24", 1 in 14" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 210

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.350"
MAX. CASE LENGTH: 1.912"
CASE TRIM LENGTH: 1.892"

The 22-250 Remington is based on the necked down 250-3000 case with the shoulder angle changed to 28 degrees. In 1967, thirty years after the original wildcat versions, Remington began production of this cartridge in their Model 700 series rifles.

The 22-250 is only slightly less powerful than the 220 Swift and is more versatile; the 22-250 more readily handles reduced loads. This potent 22 caliber cartridge has been used for a great variety of game from varmints to deer. Of course, the 22-250 is best suited for varminting.

The powders that gave the most uniform results with best accuracy throughout the range of bullets were IMR 3031, IMR 4895, and IMR 4064. Winchester 760 gave the highest velocities with fair accuracy and may be a top choice in a different rifle. Shooters using the 45 grain Hornet bullet should note that the maximum velocity listed is 3600 fps. The reason for this limit lies in the construction of the bullet. It is designed to expand at 22 Hornet velocities and therefore has too thin a jacket to be fired at velocities higher than 3600 fps. At velocities exceeding 3600 fps, bullets sometimes come apart before they reach the target. Also, note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight. As in any of the larger 22's, the heavier bullets are normally the best choice for optimum performance.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.350"



22-250 REMINGTON

POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4895	26.7 gr.	27.9 gr.	29.2 gr.	30.4 gr.	31.6 gr.
AA 2230	27.1 gr.	28.2 gr.	29.3 gr.	30.4 gr.	31.6 gr.
AA 2460	27.1 gr.	28.3 gr.	29.5 gr.	30.8 gr.	32.0 gr.
IMR 3031	30.2 gr.	31.0 gr.	31.8 gr.	32.6 gr.	33.4 gr.
IMR 4895	30.8 gr.	31.6 gr.	32.4 gr.	33.2 gr.	34.0 gr.
H335	30.5. gr.	31.5 gr.	32.6 gr.	33.6 gr.	34.6 gr.
IMR 4064	31.8 gr.	32.5 gr.	33.3 gr.	34.1 gr.	34.9 gr.
IMR 4320	32.3 gr.	33.1 gr.	33.9 gr.	34.6 gr.	35.4 gr.
WIN 748	33.3 gr.	34.2 gr.	35.0 gr.	35.9 gr.	36.7 gr.
WIN 760	34.0 gr.	35.0 gr.	36.0 gr.	37.1 gr.	38.1 gr.
H414	37.0 gr.	37.8 gr.	38.7 gr.	39.5 gr.	40.4 gr.

See Ballistics Tables on pages 13-15, Vol. II



Indicates maximum load - use with caution

50 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.142**
.224"**#2245 SP****Ballistic Coefficient — .214****C.O.L. — 2.350"**

POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
H4895	30.9 gr.	32.0 gr.	33.1 gr.	34.2 gr.	35.3 gr.	
AA 2230	30.3 gr.	31.4 gr.	32.5 gr.	33.6 gr.	34.7 gr.	35.9 gr.
AA 2460	30.9 gr.	32.1 gr.	33.3 gr.	34.6 gr.		
IMR 3031	31.8 gr.	32.7 gr.	33.6 gr.	34.5 gr.	35.4 gr.	
IMR 4895	32.3 gr.	33.2 gr.	34.2 gr.	35.1 gr.		
IMR 4064	33.1 gr.	34.0 gr.	34.9 gr.	35.8 gr.	36.7 gr.	
H335	32.9 gr.	33.9 gr.	34.9 gr.	35.9 gr.	36.9 gr.	37.9 gr.
IMR 4320	33.9 gr.	34.8 gr.	35.7 gr.			
WIN 748	34.7 gr.	35.7 gr.	36.7 gr.	37.7 gr.	38.7 gr.	
WIN 760	36.0 gr.	37.2 gr.	38.4 gr.	39.5 gr.	40.7 gr.	41.9 gr.
H414	38.8 gr.	39.6 gr.	40.4 gr.	41.3 gr.	42.1 gr.	43.0 gr.

See Ballistics Tables on pages 15-18, Vol. II*Indicates maximum load • use with caution*

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.350"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.350"



22-250 REMINGTON

POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4895	31.1 gr.	32.0 gr.	32.9 gr.	33.9 gr.		
AA 2230	30.4 gr.	31.6 gr.	32.8 gr.	34.0 gr.	35.2 gr.	
AA 2460	30.3 gr.	31.6 gr.	33.0 gr.	34.3 gr.		
IMR 3031	31.0 gr.	32.1 gr.	33.1 gr.	34.2 gr.		
IMR 4895	31.4 gr.	32.5 gr.	33.6 gr.	34.6 gr.		
H335	32.0 gr.	33.2 gr.	34.3 gr.	35.4 gr.		
IMR4064	32.7 gr.	33.6 gr.	34.5 gr.	35.4 gr.	36.3 gr.	
IMR 4320	33.4 gr.	34.4 gr.	35.3 gr.			
WIN 748	33.4 gr.	34.7 gr.	35.9 gr.	37.1 gr.		
WIN 760		36.5 gr.	37.7 gr.	39.0 gr.	40.2 gr.	41.4 gr.
H414	37.6 gr.	38.6 gr.	39.6 gr.	40.6 gr.	41.5 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II

Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.350"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.350"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.O. — 2.350"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4895	31.1 gr.	32.0 gr.	32.9 gr.	33.9 gr.		
AA 2230	30.4 gr.	31.6 gr.	32.8 gr.	34.0 gr.	35.2 gr.	
AA 2460	30.3 gr.	31.6 gr.	33.0 gr.	34.3 gr.		
IMR 3031	31.0 gr.	32.1 gr.	33.1 gr.	34.2 gr.		
IMR 4895	31.4 gr.	32.5 gr.	33.6 gr.	34.6 gr.		
H335	32.0 gr.	33.2 gr.	34.3 gr.	35.4 gr.		
IMR4064	32.7 gr.	33.6 gr.	34.5 gr.	35.4 gr.	36.3 gr.	
IMR 4320	33.4 gr.	34.4 gr.	35.3 gr.			
WIN 748	33.4 gr.	34.7 gr.	35.9 gr.	37.1 gr.		
WIN 760		36.5 gr.	37.7 gr.	39.0 gr.	40.2 gr.	41.4 gr.
H414	37.6 gr.	38.6 gr.	39.6 gr.	40.6 gr.	41.5 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2267 FMJ-BT w/c
Ballistic Coefficient — .243
C.O.L. — 2.350"



REDUCED LOAD

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4227	13.9 gr.	14.8 gr.	15.7 gr.	16.6 gr.	17.6 gr.	18.5 gr.

See Ballistics Tables on pages 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.350"



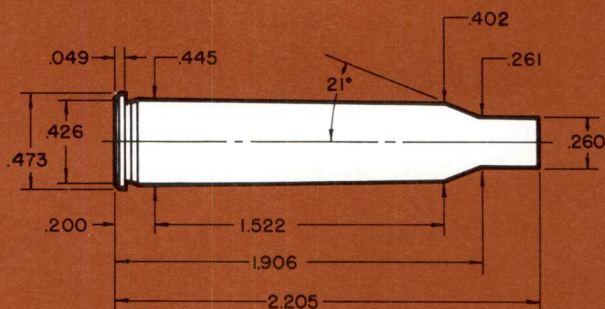
#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.350"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4895	29.4 gr.	30.4 gr.	31.5 gr.	32.5 gr.	33.6 gr.	
IMR 3031	29.2 gr.	30.4 gr.	31.5 gr.	32.6 gr.	33.7 gr.	
AA 2460	28.0 gr.	29.4 gr.	30.9 gr.	32.3 gr.	33.7 gr.	
AA 2230	28.7 gr.	30.0 gr.	31.3 gr.	32.6 gr.	33.9 gr.	
IMR 4895	29.6 gr.	30.7 gr.	31.7 gr.	32.8 gr.	33.9 gr.	35.0 gr.
IMR 4064	30.6 gr.	31.6 gr.	32.7 gr.	33.8 gr.	34.8 gr.	35.9 gr.
H335	30.3 gr.	31.6 gr.	32.9 gr.	34.2 gr.		
IMR 4320	31.5 gr.	32.5 gr.	33.6 gr.	34.6 gr.		
WIN 748	30.7 gr.	32.1 gr.	33.6 gr.	35.1 gr.	36.5 gr.	
WIN 760		34.7 gr.	36.0 gr.	37.4 gr.	38.7 gr.	40.1 gr.
H414	35.5 gr.	36.6 gr.	37.6 gr.	38.7 gr.	39.7 gr.	40.7 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

Indicates maximum load • use with caution



220 SWIFT

RIFLE: RUGER 77
BARREL: 26", 1 in 14" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.680"
MAX. CASE LENGTH: 2.205"
CASE TRIM LENGTH: 2.195"

In 1935 Winchester introduced the 220 Swift in their Model 54 bolt action rifle. The Swift is based on the semi-rimmed 6mm Lee Navy case necked down to 22 caliber with less body taper and a sharper shoulder.

Because of bad publicity as a barrel burner, the popularity of the cartridge gradually faded. This ill-fame stemmed mainly from the extreme pressures at which it originally operated. Modern barrel steel and newer cleaning techniques have substantially improved barrel life. Also, with loads reduced slightly (one hundred feet per second or so) barrel and case life is as good as any other cartridge with an equivalent powder capacity.

The 220 Swift has been used on game varying in size from varmints to deer, but is best suited as a varmint cartridge. Using Hornady varmint bullets, the Swift is an excellent 300-400 yard varmint.

Ruger and Sako helped revive the popularity of the Swift by chambering rifles for this venerable round. Hornady reintroduced the Swift and currently is the only U.S. manufacturer of factory ammunition.

Best overall results in our rifle were obtained with WIN 760, H414, and the heavier bullets (55 grain Spire Point and 60 grain Spire Point). Note the thin jacket of SX bullets limits them to velocities of 3500 fps. Exceeding this limit can result in bullets disintegrating in flight. Contrary to popular belief, we encountered no loading problems, along with completely normal case life.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.680"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
AA 2520	24.2 gr.	25.7 gr.	27.1 gr.	28.6 gr.	30.1 gr.	31.5 gr.
IMR 4895	29.0 gr.	29.7 gr.	30.4 gr.	31.1 gr.	31.9 gr.	32.6 gr.
RL-15	27.3 gr.	28.5 gr.	29.7 gr.	30.9 gr.	32.1 gr.	33.3 gr.
IMR 4064	28.2 gr.	29.5 gr.	30.7 gr.	31.9 gr.	33.1 gr.	34.3 gr.
WIN 760	33.5 gr.	34.4 gr.	35.4 gr.	36.3 gr.	37.2 gr.	38.1 gr.
H414	34.4 gr.	35.3 gr.	36.2 gr.	37.2 gr.	38.1 gr.	39.0 gr.
IMR 4350	36.3 gr.	37.4 gr.	38.5 gr.	39.6 gr.	40.6 gr.	41.7 gr.

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.680"



POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
AA 2520			32.9 gr.	34.7 gr.	36.6 gr.	38.5 gr.
RL-15	32.2 gr.	33.5 gr.	34.9 gr.	36.3 gr.	37.7 gr.	
IMR 4064	32.9 gr.	34.3 gr.	35.6 gr.	37.0 gr.	38.4 gr.	
WIN 760	37.0 gr.	38.1 gr.	39.3 gr.	40.4 gr.	41.5 gr.	42.5 gr.
H414	37.0 gr.	38.1 gr.	39.3 gr.	40.4 gr.	41.5 gr.	42.7 gr.
IMR 4350	39.6 gr.	40.6 gr.	41.6 gr.	42.7 gr.	43.7 gr.	

See Ballistics Tables on pages 15-18, Vol. II

Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.148 - .151
.224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.680"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.680"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4895	31.3 gr.	32.3 gr.				
RL15		32.7 gr.	34.2 gr.	35.6 gr.	37.0 gr.	38.4 gr.
IMR 4064	32.6 gr.	33.6 gr.	34.7 gr.			
H414	36.3 gr.	37.4 gr.	38.5 gr.	39.7 gr.	40.8 gr.	41.9 gr.
WIN 760	36.5 gr.	37.5 gr.	38.6 gr.	39.7 gr.	40.7 gr.	41.8 gr.
IMR 4350	39.2 gr.	40.1 gr.	41.0 gr.	41.9 gr.	42.8 gr.	43.7 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II

Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.680"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.680"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.680"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4895	31.3 gr.	32.3 gr.				
RL-15		32.7 gr.	34.2 gr.	35.6 gr.	37.0 gr.	38.4 gr.
IMR 4064	32.6 gr.	33.6 gr.	34.7 gr.			
H414	36.3 gr.	37.4 gr.	38.5 gr.	39.7 gr.	40.8 gr.	41.9 gr.
WIN 760	36.5 gr.	37.5 gr.	38.6 gr.	39.7 gr.	40.7 gr.	41.8 gr.
IMR 4350	39.2 gr.	40.1 gr.	41.0 gr.	41.9 gr.	42.8 gr.	43.7 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY:	.171
DIAMETER:	.224"

#2270 SP
Ballistic Coefficient — .264
C.O.L. — 2.680"



#2275 HP
Ballistic Coefficient — .271
C.O.L. — 2.680"

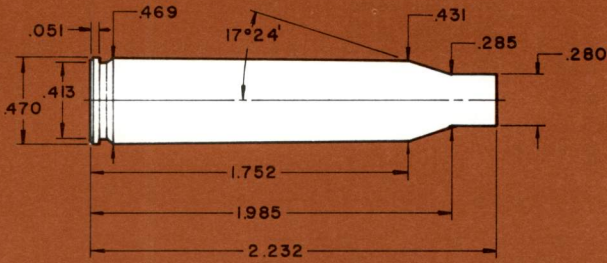


POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4895	30.8 gr.	31.9 gr.	33.1 gr.			
RL-15		32.0 gr.	33.4 gr.	34.8 gr.	36.1 gr.	37.5 gr.
IMR 4064	32.1 gr.	33.2 gr.	34.4 gr.	35.5 gr.		
WIN 760		36.4 gr.	37.6 gr.	38.9 gr.	40.2 gr.	41.4 gr.
H414		36.3 gr.	37.7 gr.	39.1 gr.	40.5 gr.	41.9 gr.
H380		35.7 gr.	37.1 gr.	38.4 gr.	39.8 gr.	41.2 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II



Indicates maximum load • use with caution



5.6 x 57mm RWS

RIFLE: MAUSER 66
BARREL: 1 in 10" TWIST
CASE: RWS
PRIMER: FEDERAL 210

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.735"
MAX. CASE LENGTH: 2.232"
CASE TRIM LENGTH: 2.222"

The 5.6 x 57 mm was designed in Germany by RWS in the years 1963-1964 expressly for hunting the small European reh deer and gams (chamois). In Germany there is a range limit at which game can be taken, plus a remaining energy level minimum; the 5.6 x 57mm was designed to meet these standards. Its cartridge case has very thick neck walls, and for a good reason. Adapter units for 22 WMR and 22 LR are very popular in Europe. For this reason the thick neck wall was necessary to handle higher case-neck pressures.

The extra thickness of the brass in this particular cartridge presented a slight problem with reloading. During testing the case neck did not expand to seal the chamber until the powder charge was within 3 grains of maximum. Powder residue was present on the exterior of the cases up to that point, but accuracy and uniformity were not affected.

Because of the fast twist, 1:10", as compared to most 22 calibers being 1:14", 22 caliber Hornady SX bullets should not be used. Due to the high rotational speed, the very thin jacketed bullets blow up before they reach the target. All regular Spire Point bullets work very well, with the best results obtained from the heavier 55 grain and 60 grain Spire Points.

Best results were obtained with the Hornady 55 grain Spire Point and IMR 4320. Loaded properly, this cartridge will perform ballistically as well, and better in some instances, than the 220 Swift or any other modern commercial 22 caliber.

50 GRAIN BULLETS:

SECTIONAL DENSITY: .214
DIAMETER: .224"

#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.716"



POWDER	VELOCITY				
	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4320		36.9 gr.	38.0 gr.	39.1 gr.	40.1 gr.
WIN 760		40.0 gr.	41.1 gr.	42.3 gr.	43.5 gr.
IMR 4350	39.6 gr.	40.4 gr.	41.3 gr.		

See Ballistics Tables on pages 15-18, Vol. II

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.716"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.716"



POWDER	VELOCITY				
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4320	35.9 gr.	36.8 gr.	37.7 gr.	38.5 gr.	39.4 gr.
IMR 4350	38.5 gr.	39.5 gr.	40.4 gr.	41.3 gr.	
WIN 760	38.8 gr.	39.8 gr.	40.8 gr.	41.9 gr.	42.9 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II

 Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.716"

**#2266 SP w/c**

Ballistic Coefficient — .235
C.O.L. — 2.716"

**#2267 FMJ-BT w/c**

Ballistic Coefficient — .243
C.O.L. — 2.716"



POWDER	VELOCITY				
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4320	35.9 gr.	36.8 gr.	37.7 gr.	38.5 gr.	39.4 gr.
IMR 4350	38.5 gr.	39.5 gr.	40.4 gr.	41.3 gr.	
WIN 760	38.8 gr.	39.8 gr.	40.8 gr.	41.9 gr.	42.9 gr.

See Ballistics Tables on pages 23-25, 25-28, Vol. II

60 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .224"

#2270 SP

Ballistic Coefficient — .264
C.O.L. — 2.735"

**#2275 HP**

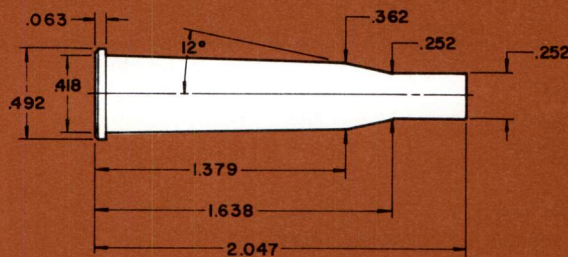
Ballistic Coefficient — .271
C.O.L. — 2.735"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4320	34.8 gr.	35.4 gr.	36.6 gr.	37.7 gr.	38.8 gr.
WIN 760	37.3 gr.	38.4 gr.	39.6 gr.	40.7 gr.	41.9 gr.
IMR 4350	37.9 gr.	38.7 gr.	39.5 gr.	40.4 gr.	41.2 gr.

See Ballistics Tables on pages 28-30, 30-33, Vol. II

 Indicates maximum load • use with caution



5.6 X 52R (22 SAVAGE HIGH-POWER)

RIFLE: MAUSER 66
BARREL: 1 in 10⁵/₈" TWIST
CASE: RWS
PRIMER: FEDERAL 210

BULLET DIAMETER: .227"
MAXIMUM C.O.L.: 2.510"
MAX. CASE LENGTH: 2.047"
CASE TRIM LENGTH: 2.037"

The 5.6 X 52R, as it is designated in Europe, or 22 Savage High-Power in the U.S., was designed by Charles Newton and was introduced commercially by Savage Arms Company in 1912. The case is based on the 25-35 necked down to 22 caliber. The cartridge has long been obsolete in the U.S. and Europe. Our test rifle, a Mauser Model 66, was a special order.

The 5.6 X 52R uses the Hornady .227" diameter 70 grain Spire Point bullet. Note: Do not use this 22 caliber bullet in other 22's as dangerous pressures will occur due to its larger diameter (.227" as opposed to standard .224"). However, some users have reported useful accuracy in the .227" bore with .224" bullets.

It was originally intended as a varmint and deer sized cartridge, but it was soon evident that it was better for varmint than deer. Its use should remain primarily as a varmint and small game round.

Best results in the area of accuracy and uniformity were obtained with IMR 3031. Note that this data was developed in a modern bolt action rifle. If these loads are intended for use in lever action or combination guns the maximum loads should be dropped at least 10%.

70 GRAIN BULLETS:

SECTIONAL DENSITY: .199
DIAMETER: .227"

#2280 SP
Ballistic Coefficient — .296
C.O.L. — 2.510"

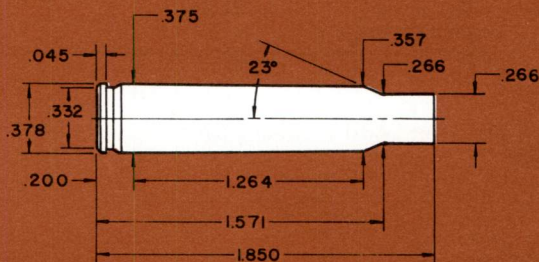


POWDER	VELOCITY						
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4198			20.2 gr.	21.1 gr.	22.1 gr.	23.1 gr.	
RL-7	19.8 gr.	20.5 gr.	21.3 gr.	22.1 gr.	22.9 gr.	23.6 gr.	
IMR 3031	22.1 gr.	23.0 gr.	23.8 gr.	24.7 gr.	25.6 gr.	26.5 gr.	27.4 gr.

See Ballistics Tables on pages 35-37, Vol. II

5.6 X 52R (22 SAVAGE HIGH-POWER)

 Indicates maximum load • use with caution



6 X 47mm

RIFLE: REMINGTON 40X
BARREL: 27", 1 in 14" TWIST
CASE: FEDERAL
PRIMER: REMINGTON 7½

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.485"
MAX. CASE LENGTH: 1.850"
CASE TRIM LENGTH: 1.840"

The 6 X 47mm is a wildcat cartridge that is nothing more than the 222 Magnum necked up to 6mm. Its original and sole intent was as a bench rest cartridge, and that is how it remains. The only company that chambers the 6 X 47mm is Remington, and it is available in only the 40-XB action. No manufacturer provides loaded ammunition for the 6 X 47mm.

In bench rest circles, the 6mm caliber has become fairly popular. The main reasons are improved wind resistance over the 22's and less recoil than the 308's. The 6 X 47mm is not the most popular 6mm in the bench rest game, but it has accounted for many wins. The potential is there. However, the 6mm PPC has become the current popular bench rest cartridge. Also, the 6 X 47mm has all the attributes necessary for a good varmint cartridge, and the only existing problem is lack of support from the firearms industry.

The powders that performed best in our test firearm were IMR 4198, BL-C2, and Winchester 748. Winchester 748 has become popular with bench rest shooters because of its uniformity from one lot to the next. Best accuracy was obtained using the Hornady 75 grain Hollow Point and Winchester 748.

Warning: The loading data presented here is maximum for our rifle and components. Maximum loads should be approached by small increments because of the high loading density of this small cartridge. During our testing, primers other than R-P 7½'s were substituted at various intervals, resulting in many pierced primers before maximum loads were obtained. As always, if any components are changed when working with a maximum load, the load should be reduced and slowly developed again.

70 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.169**
.243"**#2410 SP****Ballistic Coefficient — .262**
C.O.L. — 2.460"**#2415 SXSP****Ballistic Coefficient — .269**
C.O.L. — 2.460"

POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RL-7	20.3 gr.	21.2 gr.	22.0 gr.			
IMR 4198	20.6 gr.	21.5 gr.	22.4 gr.	23.3 gr.	24.3 gr.	
H322	23.0 gr.	23.8 gr.	24.6 gr.	25.4 gr.		
IMR 4895	25.3 gr.	26.1 gr.	26.9 gr.	27.7 gr.		
BL-C2	25.4 gr.	26.4 gr.	27.4 gr.	28.4 gr.		
WIN 748	26.3 gr.	27.2 gr.	28.0 gr.	28.9 gr.	29.7 gr.	30.6 gr.

*See Ballistics Tables on pages 37-39, 39-40, Vol. II***75 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.181**
.243"**#2420 HP****Ballistic Coefficient — .294**
C.O.L. — 2.445"

POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
RL-7	19.1 gr.	20.0 gr.	20.9 gr.	21.9 gr.		
IMR 4198	19.3 gr.	20.2 gr.	21.2 gr.	22.1 gr.	23.1 gr.	24.1 gr.
H322	21.6 gr.	22.5 gr.	23.3 gr.	24.1 gr.	24.9 gr.	
IMR 4895	23.8 gr.	24.6 gr.	25.4 gr.	26.3 gr.	27.1 gr.	27.9 gr.
BL-C2	24.0 gr.	24.9 gr.	25.8 gr.	26.7 gr.	27.6 gr.	28.5 gr.
WIN 748	23.9 gr.	24.9 gr.	25.9 gr.	26.9 gr.	27.9 gr.	28.9 gr.

See Ballistics Tables on pages 40-42, Vol. II Indicates maximum load • use with caution

6 X 47mm

87 GRAIN BULLETS:

SECTIONAL DENSITY:	.210
DIAMETER:	.243"

#2440 SP

Ballistic Coefficient — .327
C.O.L. — 2.485"



#2442 BTHP

Ballistic Coefficient — .376
C.O.L. — 2.485"

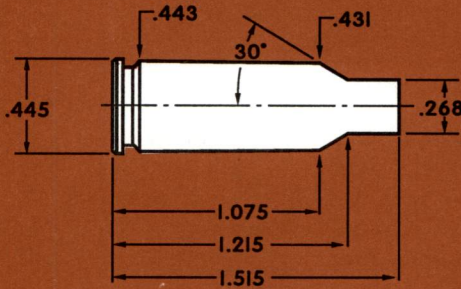


POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4198	19.5 gr.	20.4 gr.	21.3 gr.	22.2 gr.	
IMR 3031	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.	25.8 gr.
H335	22.7 gr.	23.7 gr.	24.6 gr.	25.5 gr.	
IMR 4895	23.1 gr.	24.0 gr.	24.9 gr.	25.8 gr.	
WIN 748	24.0 gr.	24.9 gr.	25.8 gr.	26.7 gr.	27.6 gr.

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II



Indicates maximum load • use with caution



6mm PPC

RIFLE: REMINGTON 40X CUSTOM
BARREL: 22", 1 in 14" TWIST
CASE: SAKO
PRIMER: FEDERAL 205

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.105"
MAX. CASE LENGTH: 1.515"
CASE TRIM LENGTH: 1.505"

Few rifle experimenters achieve success as did R. Lou Palmisano and Ferris Pindell. Their goal was to develop the most accurate cartridge known and perhaps they did. It is the most popular 6mm cartridge among today's competitive benchrest shooters, and it makes an excellent varmint round.

The cartridge was derived from the 22 PPC by benchrest shooters who wanted a cartridge with a heavier, larger bullet. The 22 PPC itself is derived from the 7.62 X 39 cartridge. Not only is it reshaped to its current shape, but it utilizes small rifle primers and has smaller than normal flash holes, both thought to be conducive to accuracy.

Since many of the rifles are custom made guns (only Sako produces factory firearms) the chamber dimensions especially the neck diameter are variable, usually of minimum dimension. Some rifles have very tight necks and some cartridges may not fit or fit so closely that unusually high pressures could result.

Because of its small powder capacity, we have listed two weights of bullets, as heavier bullets were slower in velocity.

70 GRAIN BULLETS:

SECTIONAL DENSITY:	.169
DIAMETER:	.243"

#2410 SP
Ballistic Coefficient — .262
C.O.L. — 2.105"



#2415 SXSP
Ballistic Coefficient — .269
C.O.L. — 2.105"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
RL-7		21.5 gr.	22.5 gr.	23.4 gr.	
IMR 4198		21.5 gr.	22.8 gr.	24.0 gr.	25.3 gr.
H322		25.2 gr.	26.2 gr.	27.1 gr.	28.1 gr.
AA 2230		26.1 gr.	27.0 gr.	27.9 gr.	28.8 gr.
H335	26.1 gr.	27.2 gr.	28.2 gr.	29.3 gr.	
WIN 748	27.7 gr.	28.8 gr.			

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY:	.181
DIAMETER:	.243"

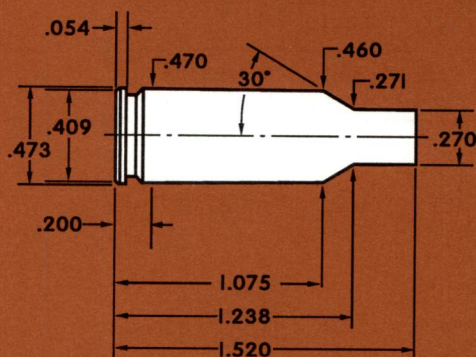
#2420 HP
Ballistic Coefficient — .294
C.O.L. — 2.105"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
RL-7	21.6 gr.	22.6 gr.	23.5 gr.		
IMR 4198		22.9 gr.	23.6 gr.	24.3 gr.	
H322		24.8 gr.	25.8 gr.	26.7 gr.	
AA 2230		26.0 gr.	27.0 gr.	28.0 gr.	29.0 gr.
H335	25.6 gr.	26.7 gr.	27.7 gr.	28.8 gr.	
WIN 748	27.2 gr.	28.3 gr.			

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution



6mm BR

TEST RIFLE: REM. 40X CUSTOM
BARREL: 24", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7½

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.167"
MAX. CASE LENGTH: 1.520"
CASE TRIM LENGTH: 1.510"

In the late 70's, Remington introduced a 308 case with a small primer pocket and walls designed for reforming to smaller cartridges. Initially most reloaders opted for the 7mm bench rest, especially in bolt action pistols for silhouette shooting. Some opted for a similar cartridge with a 6mm bullet, the 6mm Bench Rest. In 1989, Remington began offering factory loaded ammunition in 6mm BR as well as empty cases. The factory ammunition and firearms have a neck .04" longer than many older custom firearms. *If in doubt about your chamber, have your firearm checked by a competent gunsmith.* The neck dimension of the chamber can be altered, or more simply, the factory cases trimmed to the shorter dimension.

This cartridge was designed for target shooting and varmint hunting. Consequently, our firearm was ordered with a 1 in 14" twist intended for shooting only lighter 6mm bullets. However, the 80 grain SSSP and the 87 grain SP can be successfully used on deer sized or smaller game. Firearms with a 1 in 10" twist would be more suitable and will stabilize heavier bullets.

Handguns are also available in 6mm BR. Velocity loss may not be significant in the 15-16" length handgun barrels. In either rifle or pistol loaded with appropriate bullets, the 6mm BR is adequate for deer sized game as well as excellent for varminting.

In our testing, Winchester's 748 performed well with all bullet weights. Accurate Arm's 2015 also worked well with the lighter bullets.

70 GRAIN BULLETS:

SECTIONAL DENSITY:	.169
DIAMETER:	.243"

#2410 SP

Ballistic Coefficient — .262
C.O.L. — 2.145"

**#2415 SXSP**

Ballistic Coefficient — .269
C.O.L. — 2.145"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
RL-7	22.5 gr.	23.7 gr.	24.8 gr.		
H322	24.8 gr.	25.9 gr.	27.1 gr.		
AA 2015		26.1 gr.	27.1 gr.	28.2 gr.	29.2 gr.
AA 2460	25.7 gr.	26.9 gr.	28.1 gr.	29.3 gr.	
AA 2230	26.5 gr.	27.7 gr.	28.9 gr.	30.0 gr.	
RL-12	27.6 gr.	28.6 gr.	29.6 gr.		
WIN 748	28.2 gr.	29.2 gr.	30.3 gr.	31.3 gr.	32.3 gr.

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY:	.181
DIAMETER:	.243"

#2420 HP

Ballistic Coefficient — .294
C.O.L. — 2.160"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
RL-7	22.9 gr.	23.8 gr.			
H322	24.3 gr.	25.4 gr.	26.6 gr.		
AA 2015	24.9 gr.	25.9 gr.	26.9 gr.	28.0 gr.	29.0 gr.
AA 2460	26.3 gr.	27.5 gr.	28.6 gr.	29.7 gr.	
AA 2230	26.8 gr.	27.9 gr.	28.9 gr.	30.0 gr.	
RL-12	27.6 gr.	28.6 gr.	29.6 gr.		
WIN 748	28.9 gr.	30.0 gr.	31.1 gr.	32.1 gr.	33.2 gr.

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution

80 GRAIN BULLETS:

SECTIONAL DENSITY: .194
DIAMETER: .243"

#2430 FMJ

Ballistic Coefficient — .261
C.O.L. — 2.153"



#2435 SSSP

Ballistic Coefficient — .283
C.O.L. — 2.153"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
RL-7	20.4 gr.	21.6 gr.	22.9 gr.	24.1 gr.		
H322	22.0 gr.	23.3 gr.	24.5 gr.			
AA 2460		25.5 gr.	26.8 gr.	28.0 gr.	29.3 gr.	
RL-12	25.2 gr.	26.4 gr.	27.5 gr.	28.6 gr.		
WIN 748		27.0 gr.	28.2 gr.	29.4 gr.	30.6 gr.	31.8 gr.

See Ballistics Tables on pages 42-44, 44-46, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .210
DIAMETER: .243"

#2440 SP

Ballistic Coefficient — .327
C.O.L. — 2.167"



#2442 BTHP

Ballistic Coefficient — .376
C.O.L. — 2.167"

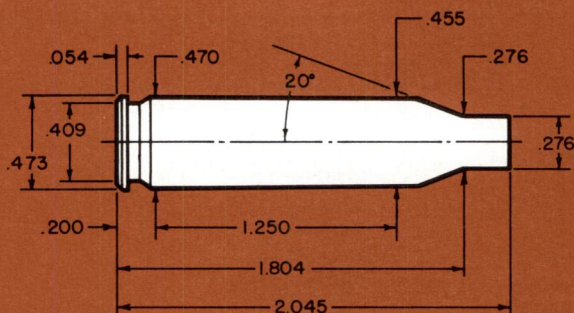


POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
RL-7	20.6 gr.	21.7 gr.	22.7 gr.	23.7 gr.		
H322	21.9 gr.	23.1 gr.	24.3 gr.	25.5 gr.		
AA 2460		25.0 gr.	26.3 gr.	27.7 gr.	29.0 gr.	
RL-12	24.7 gr.	25.8 gr.	27.0 gr.	28.1 gr.		
WIN 748			27.6 gr.	28.8 gr.	30.1 gr.	31.3 gr.

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II



Indicates maximum load • use with caution



243 WINCHESTER

RIFLE: WINCHESTER 70
BARREL: 24", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 210

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.650"
MAX. CASE LENGTH: 2.045"
CASE TRIM LENGTH: 2.035"

The 243, a 6mm cartridge necked down from the 308 case, was introduced in 1955 by Winchester. The versatility and accuracy of the 243 soon elevated it to levels of popularity not to be exceeded by any other round in its class. Much of the original acclaim about the all-around capabilities of the 243 can be credited to the late Warren Page.

This potent 6mm cartridge is suitable for game ranging from prairie dogs to deer. Hornady offers four explosive varmint bullets for all phases of varminting: the 70 grain Spire Point, the 70 grain SX Spire Point, the 75 grain Hollow Point, and the 87 grain Spire Point. The 70 grain SX Spire Point bullet has a very thin jacket and velocities in excess of 3400 fps may cause this bullet to disintegrate in flight. At lower velocities, it is still quite flat shooting and explosive. The 80 grain Full Metal Jacket was designed with the pelt hunter in mind and the 100 grain Spire Point, 100 grain Boattail Spire Point, and 100 grain Round Nose were constructed to give good penetration and controlled expansion in deer sized game.

During our testing, several powders performed very well. Those powders were IMR 3031, IMR 4064, and IMR 4831 with the very best groups and uniformity obtained from IMR 3031. Slow burning powders such as IMR 4350 are not safe when loaded with reduced charges. Lighter charges of a slow burning propellant may cause unexpected high pressure, known as detonation. In some instances primers are blown, bolts stick, or even stocks are splintered. At any rate, this detonation problem only exists with lower charges of slow burning powder and we do not recommend such use in the 243. Never use charges of slow burning powders lower than listed in our data.

70 GRAIN BULLETS:

SECTIONAL DENSITY:	.169
DIAMETER:	.243"

#2410 SP

Ballistic Coefficient — .262
C.O.L. — 2.650"



#2415 SXSP

Ballistic Coefficient — .269
C.O.L. — 2.650"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
AA 2520	33.1 gr.	34.5 gr.	35.8 gr.	37.1 gr.	38.5 gr.	39.8 gr.
IMR 3031	35.8 gr.	36.8 gr.	37.9 gr.	39.0 gr.	40.0 gr.	41.1 gr.
RL-12	34.8 gr.	36.1 gr.	37.5 gr.	38.8 gr.	40.2 gr.	
IMR 4895	36.2 gr.	37.3 gr.	38.4 gr.	39.5 gr.	40.6 gr.	
IMR 4064	37.0 gr.	38.1 gr.	39.2 gr.	40.3 gr.	41.4 gr.	42.5 gr.
IMR 4320	37.7 gr.	38.8 gr.	39.9 gr.	41.0 gr.	42.0 gr.	43.1 gr.
WIN 760	40.3 gr.	41.5 gr.	42.7 gr.	44.0 gr.	45.2 gr.	
H4350	42.2 gr.	43.4 gr.	44.6 gr.	45.8 gr.	47.0 gr.	
IMR 4831	43.8 gr.	44.9 gr.	46.0 gr.	47.1 gr.	48.2 gr.	49.4 gr.

See Ballistics Tables on pages 37-39, 39-40, Vol. II

Indicates maximum load • use with caution

75 GRAIN BULLETS:

SECTIONAL DENSITY: .181
DIAMETER: .243"

#2420 HP
Ballistic Coefficient — .294
C.O.L. — 2.640"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
AA 2520	34.5 gr.	35.8 gr.	37.1 gr.	38.4 gr.	
IMR 3031	36.0 gr.	37.2 gr.	38.3 gr.	39.5 gr.	
RL-12	35.7 gr.	37.0 gr.	38.3 gr.	39.6 gr.	
IMR 4895	36.1 gr.	37.4 gr.	38.7 gr.	39.9 gr.	
IMR 4064	36.8 gr.	38.1 gr.	39.4 gr.	40.7 gr.	
IMR 4320	37.7 gr.	38.9 gr.	40.2 gr.	41.4 gr.	
WIN 760	40.1 gr.	41.4 gr.	42.7 gr.	44.0 gr.	
IMR 4831	42.1 gr.	43.1 gr.	44.2 gr.	45.3 gr.	
H4350	42.4 gr.	43.6 gr.	44.8 gr.	45.9 gr.	47.1 gr.
H450	42.2 gr.	43.8 gr.	45.3 gr.	46.9 gr.	

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution

80 GRAIN BULLETS:

SECTIONAL DENSITY: .194
DIAMETER: .243"

#2430 FMJ
Ballistic Coefficient — .261
C.O.L. — 2.600"



#2435 SSSP
Ballistic Coefficient — .283
C.O.L. — 2.600"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
AA 2520	32.2 gr.	33.7 gr.	35.1 gr.	36.5 gr.	37.9 gr.	
RL-12	33.2 gr.	34.6 gr.	35.9 gr.	37.2 gr.	38.5 gr.	
IMR 3031	33.5 gr.	34.8 gr.	36.0 gr.	37.3 gr.	38.5 gr.	
IMR 4895	34.0 gr.	35.3 gr.	36.6 gr.	37.9 gr.	39.2 gr.	
IMR 4064	35.5 gr.	36.6 gr.	37.8 gr.	38.9 gr.	40.1 gr.	
IMR 4320	34.9 gr.	36.3 gr.	37.6 gr.	38.9 gr.	40.2 gr.	
WIN 760		38.9 gr.	40.2 gr.	41.5 gr.	42.8 gr.	44.1 gr.
H4350	40.2 gr.	41.3 gr.	42.5 gr.	43.6 gr.	44.7 gr.	45.8 gr.
IMR 4831	41.5 gr.	42.7 gr.	43.9 gr.	45.1 gr.	46.2 gr.	

REDUCED LOADS

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR 4759	16.8 gr.	18.3 gr.	19.8 gr.	21.2 gr.	22.7 gr.	24.2 gr.

See Ballistics Tables on pages 42-44, 44-46, Vol. II

243 WINCHESTER



Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY: .210
DIAMETER: .243"

#2440 SP
Ballistic Coefficient — .327
C.O.L. — 2.640"



#2442 BTHP
Ballistic Coefficient — .376
C.O.L. — 2.640"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
AA 2520	33.1 gr.	34.6 gr.	36.1 gr.		
RL-12	33.7 gr.	35.3 gr.	36.9 gr.		
IMR 3031	34.0 gr.	35.3 gr.	36.6 gr.	37.9 gr.	
IMR 4895	34.6 gr.	35.8 gr.	37.1 gr.	38.3 gr.	
IMR 4064	35.4 gr.	36.7 gr.	37.9 gr.	39.2 gr.	
IMR 4320	35.8 gr.	37.1 gr.	38.4 gr.	39.7 gr.	
WIN 760	38.0 gr.	39.3 gr.	40.5 gr.	41.7 gr.	42.9 gr.
IMR 4831	39.4 gr.	40.9 gr.	42.3 gr.	43.8 gr.	
H450	40.2 gr.	41.9 gr.	43.5 gr.		
RL-19	41.2 gr.	42.5 gr.	43.7 gr.	45.0 gr.	46.3 gr.
H4350	40.6 gr.	41.8 gr.	43.1 gr.	44.3 gr.	

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II



Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .243"

#2450 SP

Ballistic Coefficient — .381
C.O.L. — 2.630"



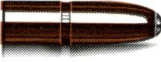
#2453 BTSP

Ballistic Coefficient — .405
C.O.L. — 2.625"



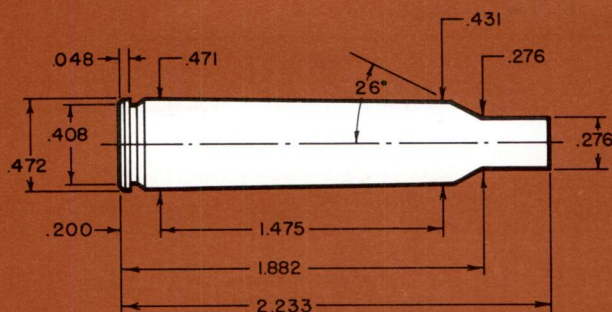
#2455 RN

Ballistic Coefficient — .230
C.O.L. — 2.616"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
AA 2520	31.3 gr.	32.8 gr.	34.4 gr.		
IMR 4895	32.6 gr.	34.0 gr.	35.3 gr.		
IMR 4064	33.6 gr.	34.9 gr.	36.2 gr.	37.5 gr.	
IMR 4320	34.2 gr.	35.5 gr.	36.8 gr.	38.2 gr.	
WIN 760	35.5 gr.	37.0 gr.	38.6 gr.	40.2 gr.	
IMR 4831	37.2 gr.	38.4 gr.	39.7 gr.	40.9 gr.	
IMR 4350		39.0 gr.	40.1 gr.	41.4 gr.	
H4350	38.4 gr.	39.8 gr.	41.1 gr.	42.5 gr.	
H450		39.5 gr.	41.4 gr.	43.3 gr.	
RL-19	38.8 gr.	40.2 gr.	41.6 gr.	43.0 gr.	44.4 gr.
IMR 7828	40.8 gr.	42.4 gr.	43.9 gr.	45.5 gr.	

See Ballistics Tables on pages 49-51, 51-53, 53-55, 220-221, 221-223, Vol. II



6mm REMINGTON

RIFLE: REMINGTON 700
BARREL: 22", 1 in 9" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.825"
MAX. CASE LENGTH: 2.233"
CASE TRIM LENGTH: 2.223"

The 6mm Remington was introduced by Remington in 1963 to replace the original 1955 version, the 244. The two cartridges are identical in every way and are based on the 7 x 57mm case necked down with the shoulder angle increased by about 5 degrees. The 244, as it was introduced, had a twist rate of 1 in 12", which left it unable to stabilize the long 100 grain Spire Point bullets and thereby reduced the versatility of the round. However, Hornady offers a 100 grain Round Nosed bullet for the rifles with a 1 in 12" twist. As a result, the 243 Winchester gained all the fame and glory in the 6mm caliber. When Remington finally changed to a 1:9" twist and renamed the cartridge, the shooting public became interested. Now the 6mm Remington ranks very close to the 243 in popularity, as rightfully it should. Ballistically speaking, the 6mm Remington has a slight advantage over the 243, but the difference is not enough to show a significant advantage on game animals. Note: the 70 grain SX Spire Point bullet has a very thin jacket and velocities in excess of 3400 fps may cause this bullet to disintegrate in flight. At lower velocities, it is still quite flat shooting and explosive.

As with the 243, the popularity of this round is based on its ability to perform both as a medium game and varmint cartridge. With the wide range of Hornady bullets and a wide variety of powders from which to choose, the 6mm Remington is an exciting and effective round.

IMR 4064 and IMR 4831 produced the best groups and gave the most uniform results during our testing.

70 GRAIN BULLETS:

SECTIONAL DENSITY: .169
DIAMETER: .243"

#2410 SP

Ballistic Coefficient — .262
C.O.L. — 2.825"



#2415 SXSP

Ballistic Coefficient — .269
C.O.L. — 2.825"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4320	35.5 gr.	36.5 gr.	37.5 gr.			
RL-15		37.9 gr.	39.1 gr.	40.3 gr.	41.5 gr.	42.7 gr.
IMR 4064	38.2 gr.	39.4 gr.	40.6 gr.	41.9 gr.		
H380			41.4 gr.	43.8 gr.	46.3 gr.	
WIN 760		42.6 gr.	44.2 gr.	45.9 gr.	47.6 gr.	
IMR 4350	42.1 gr.	43.5 gr.	44.9 gr.	46.4 gr.	47.8 gr.	
H4350	44.2 gr.	45.4 gr.	46.5 gr.	47.7 gr.	48.9 gr.	
IMR 4831	44.3 gr.	45.5 gr.	46.8 gr.	48.1 gr.	49.4 gr.	50.6 gr.

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .181
DIAMETER: .243"

#2420 HP
Ballistic Coefficient — .294
C.O.L. — 2.825"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4320	34.3 gr.	35.6 gr.	36.8 gr.			
RL-15	34.7 gr.	36.1 gr.	37.5 gr.	38.9 gr.	40.4 gr.	
IMR 4064	35.9 gr.	37.4 gr.	38.8 gr.	40.3 gr.	41.8 gr.	
H380	36.8 gr.	38.8 gr.	40.8 gr.	42.8 gr.		
WIN 760	40.3 gr.	41.8 gr.	43.4 gr.	45.0 gr.	46.5 gr.	
IMR 4350	41.0 gr.	42.4 gr.	43.8 gr.	45.2 gr.	46.6 gr.	
H4350	42.7 gr.	44.1 gr.	45.4 gr.	46.8 gr.	48.1 gr.	
IMR 4831	43.1 gr.	44.4 gr.	45.7 gr.	47.0 gr.	48.3 gr.	
RL-19	44.7 gr.	45.9 gr.	47.2 gr.	48.4 gr.	49.7 gr.	50.9 gr.

See Ballistics Tables on pages 40-42, Vol. II



Indicates maximum load • use with caution

80 GRAIN BULLETS:

SECTIONAL DENSITY:	.194
DIAMETER:	.243"

#2430 FMJ

Ballistic Coefficient — .261
C.O.L. — 2.825"



#2435 SSSP

Ballistic Coefficient — .283
C.O.L. — 2.825"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	32.8 gr.	34.1 gr.	35.4 gr.	36.7 gr.		
RL-15	32.9 gr.	34.1 gr.	35.6 gr.	37.1 gr.	38.6 gr.	
IMR 4064	33.6 gr.	35.0 gr.	34.3 gr.	37.7 gr.	39.0 gr.	40.3 gr.
H380	35.9 gr.	37.3 gr.	38.8 gr.	40.2 gr.		
WIN 760		38.7 gr.	40.3 gr.	42.0 gr.	43.7 gr.	45.4 gr.
IMR 4350		39.5 gr.	41.0 gr.	42.5 gr.	44.0 gr.	45.5 gr.
H4350		41.0 gr.	42.4 gr.	43.8 gr.	45.2 gr.	46.6 gr.
IMR 4831		40.8 gr.	42.4 gr.	44.0 gr.	45.6 gr.	47.1 gr.

See Ballistics Tables on pages 42-44, 44-46, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .210
DIAMETER: .243"

#2440 SP
Ballistic Coefficient — .327
C.O.L. — 2.825"



#2442 BTHP
Ballistic Coefficient — .376
C.O.L. — 2.825"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	33.1 gr.	34.5 gr.	36.0 gr.			
RL-15	32.3 gr.	34.1 gr.	35.9 gr.	37.6 gr.		
IMR 4064	34.6 gr.	35.9 gr.	37.2 gr.	38.5 gr.		
H380	36.3 gr.	38.0 gr.	39.6 gr.	41.2 gr.		
WIN 760	37.9 gr.	39.5 gr.	41.1 gr.	42.8 gr.	44.4 gr.	
IMR 4350		40.4 gr.	41.8 gr.	43.1 gr.	44.5 gr.	
H4350		41.6 gr.	43.0 gr.	44.4 gr.	45.9 gr.	
IMR 4831		41.3 gr.	42.7 gr.	44.1 gr.	45.6 gr.	47.0 gr.
RL-19		42.8 gr.	44.2 gr.	45.6 gr.	47.0 gr.	48.4 gr.

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II



Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .243"

#2450 SP

Ballistic Coefficient — .381
C.O.L. — 2.841"

**#2453 BTSP**

Ballistic Coefficient — .405
C.O.L. — 2.825"

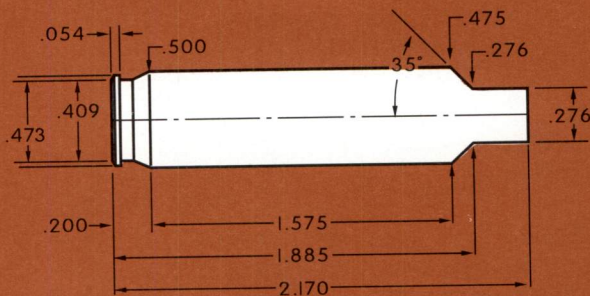
**#2455 RN**

Ballistic Coefficient — .230
C.O.L. — 2.827"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4320	31.4 gr.	32.9 gr.	34.3 gr.	35.8 gr.		
RL-15	31.3 gr.	32.7 gr.	34.1 gr.	35.6 gr.		
IMR 4064	32.2 gr.	33.7 gr.	35.2 gr.	36.6 gr.	38.1 gr.	
H380	33.7 gr.	35.5 gr.	37.4 gr.	39.3 gr.		
WIN 760	35.2 gr.	37.0 gr.	38.7 gr.	40.5 gr.		
IMR 4350	36.3 gr.	37.8 gr.	39.4 gr.	41.0 gr.	42.3 gr.	
H4350	37.7 gr.	39.2 gr.	40.7 gr.	42.2 gr.	43.8 gr.	
IMR 4831		39.2 gr.	40.7 gr.	42.2 gr.	43.8 gr.	45.3 gr.
RL-19		40.2 gr.	41.8 gr.	43.4 gr.	44.9 gr.	46.5 gr.

See Ballistics Tables on pages 49-51, 51-53, 53-55, 220-221, 221-223, Vol. II



6mm/284

RIFLE: FN MAUSER CUSTOM
BARREL: 26", 1 in 10" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.825"
MAX. CASE LENGTH: 2.170"
CASE TRIM LENGTH: 2.160"

The 1963 introduction of the 284 Winchester brought forth a furious round of wildcatting on the new cartridge, and the 6mm/284 was perhaps the best and most popular development to emerge from the process.

The 6mm/284 has greater powder capacity than either the 6mm Remington or 243 Winchester, but velocity gains possible with the wildcat are marginal — at least in our test experience.

As interest in the 284 Winchester cartridge has waned, so has enthusiasm for necking it down one millimeter to create the 6mm/284; and since the first 6mm/284's were developed, a much larger 243 caliber cartridge has appeared on the commercial market — the 240 Weatherby Magnum. It is highly improbable that the 6mm/284, with its limited advantages relative to standard factory 6mm cartridges, will ever see commercial development.

6mm/284's with at least a 1 in 10" twist will handle the full range of Hornady 6mm bullets quite well, making this wildcat suitable both for varmints and medium game. The 70 grain SX Spire Point bullet has a very thin jacket and velocities in excess of 3400 fps may cause the bullet to disintegrate in flight. At lower velocities, it is still quite flat shooting and explosive. Hornady game bullets, in this as in other calibers, are designed with thicker jackets for better penetration and can be identified by their distinctive cannelures.

6mm/284

70 GRAIN BULLETS:

SECTIONAL DENSITY:	.169
DIAMETER:	.243"

#2410 SP

Ballistic Coefficient — .262
C.O.L. — 2.765"



#2415 SXSP

Ballistic Coefficient — .269
C.O.L. — 2.765"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	33.9 gr.	35.5 gr.	37.0 gr.	38.6 gr.	40.2 gr.	
IMR 4064	36.3 gr.	37.8 gr.	39.3 gr.	40.8 gr.		
H4895	36.8 gr.	38.3 gr.	39.9 gr.	41.4 gr.	43.0 gr.	
IMR 4320	37.5 gr.	39.0 gr.	40.5 gr.	42.0 gr.	43.5 gr.	45.0 gr.
IMR 4350			44.7 gr.	46.3 gr.	47.9 gr.	49.5 gr.
H4831				50.0 gr.	51.2 gr.	52.5 gr.

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY:	.181
DIAMETER:	.243"

#2420 HP

Ballistic Coefficient — .294
C.O.L. — 2.795"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4320	39.1 gr.	40.5 gr.	41.9 gr.	43.3 gr.	44.7 gr.	
IMR 4350	43.1 gr.	44.7 gr.	46.3 gr.			
H4831	45.9 gr.	47.5 gr.	49.2 gr.	50.8 gr.	52.4 gr.	54.1 gr.

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY:	.210
DIAMETER:	.243"

#2440 SP
Ballistic Coefficient — .327
C.O.L. — 2.825"



#2442 BTHP
Ballistic Coefficient — .376
C.O.L. — 2.825"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4320	37.2 gr.	38.9 gr.	40.7 gr.	42.5 gr.	44.3 gr.	
IMR 4350	39.0 gr.	41.2 gr.	43.3 gr.	45.6 gr.	47.8 gr.	
H4831	42.2 gr.	44.1 gr.	46.0 gr.	47.9 gr.	49.8 gr.	51.7 gr.

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II

100 GRAIN BULLETS:

SECTIONAL DENSITY:	.242
DIAMETER:	.243"

#2450 SP
Ballistic Coefficient — .381
C.O.L. — 2.710"



#2453 BTSP
Ballistic Coefficient — .405
C.O.L. — 2.694"



#2455 RN
Ballistic Coefficient — .230
C.O.L. — 2.696"

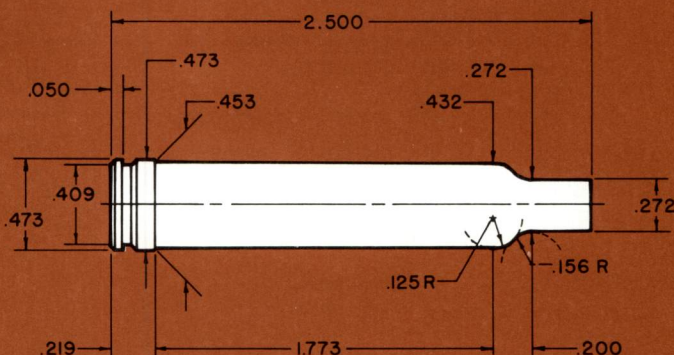


POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	37.3 gr.	38.8 gr.	40.3 gr.	41.8 gr.	43.3 gr.	
IMR 4350		42.8 gr.	44.3 gr.	45.9 gr.	47.4 gr.	49.0 gr.
H4831	43.4 gr.	45.0 gr.	46.6 gr.	48.2 gr.	49.8 gr.	51.4 gr.

See Ballistics Tables on pages 49-51, 51-53, 53-55, 220-221, 221-223, Vol. II



Indicates maximum load • use with caution



240 WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 26", 1 in 10" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 210

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 3.075"
MAX. CASE LENGTH: 2.500"
CASE TRIM LENGTH: 2.490"

The 240 Weatherby Magnum is the most powerful of all the factory loaded 6mm's commercially available; it has enough added powder capacity that it can drive a 100 grain Spire Point at a velocity 300 fps faster than either the 243 or the 6mm Remington.

In size, the 240 case head is the same as the 30-06 and has nearly identical powder capacity. The case is belted and features the familiar Weatherby double radius shoulder. The 240 Weatherby is chambered in Weatherby's deluxe Mark V rifle.

A host of powder-bullet combinations worked well in our firearm. A variety of powders produced velocities of 3900 fps with the 70 grain Spire Point and 3300 fps with the 100 grain Spire Point. The 70 grain SX bullet may disintegrate in flight at velocities over 3400 fps. Selecting slightly lower loads will avoid this problem. As testimony that our bullets perform exceedingly well in the 240, Hornady bullets are loaded in Weatherby's commercially loaded ammunition.

As in all Weatherby rifles, each barrel has more freebore than most standard commercial rifles and bullets must be seated farther out of the case to be close to the rifling. This frequently improves accuracy. Also, hunting rifles with light weight barrels tend to heat up rapidly when fired many times in succession. This heat can cause a change in impact and larger groups, as was evident with our test rifle. As with several other calibers, allowing the barrel to stay cool aids accuracy and prolongs barrel life.

70 GRAIN BULLETS:

SECTIONAL DENSITY: .169
DIAMETER: .243"

#2410 SP
Ballistic Coefficient — .262
C.O.L. — 3.075"



#2415 SXSP
Ballistic Coefficient — .269
C.O.L. — 3.075"



POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4064	42.9 gr.	44.4 gr.	45.9 gr.	47.4 gr.	48.9 gr.	50.4 gr.
IMR 4320	45.2 gr.	46.4 gr.	47.5 gr.	48.7 gr.	49.9 gr.	
WIN 760	47.8 gr.	49.2 gr.	50.7 gr.	52.2 gr.	53.7 gr.	
IMR 4350	48.6 gr.	49.8 gr.	51.0 gr.	52.1 gr.	53.3 gr.	
IMR 4831	51.1 gr.	52.3 gr.	53.4 gr.	54.6 gr.	55.8 gr.	57.0 gr.

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .181
DIAMETER: .243"

#2420 HP
Ballistic Coefficient — .294
C.O.L. — 3.075"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4064	42.5 gr.	43.9 gr.	45.4 gr.	46.9 gr.	48.4 gr.	
IMR 4320	44.1 gr.	45.4 gr.	46.7 gr.	48.1 gr.	49.1 gr.	50.7 gr.
IMR 4350	47.2 gr.	48.4 gr.	50.1 gr.	51.4 gr.	52.0 gr.	
WIN 760	47.7 gr.	48.9 gr.	50.1 gr.	51.4 gr.	52.6 gr.	
IMR 4831	49.7 gr.	50.9 gr.	52.2 gr.	53.4 gr.	54.7 gr.	55.9 gr.

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution

80 GRAIN BULLETS:

SECTIONAL DENSITY:	.194
DIAMETER:	.243"

#2430 FMJ

Ballistic Coefficient — .261
C.O.L. — 3.030"

**#2435 SSSP**

Ballistic Coefficient — .283
C.O.L. — 3.030"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	41.1 gr.	42.7 gr.	44.4 gr.	46.0 gr.	47.6 gr.
IMR 4320	42.4 gr.	43.9 gr.	45.5 gr.	47.0 gr.	48.6 gr.
WIN 760	45.8 gr.	47.3 gr.	48.9 gr.	50.5 gr.	52.0 gr.
IMR 4350	46.8 gr.	48.0 gr.	49.3 gr.	50.6 gr.	51.8 gr.
IMR 4831	48.0 gr.	49.4 gr.	50.8 gr.	52.2 gr.	53.6 gr.

REDUCED LOADS

	VELOCITY					
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4198	19.3 gr.	20.9 gr.	22.5 gr.	24.0 gr.	25.6 gr.	27.2 gr.

See Ballistics Tables on pages 42-44, 44-46, Vol. II

 Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY:	.210
DIAMETER:	.243"

#2440 SP
Ballistic Coefficient — .327
C.O.L. — 3.075"



#2442 BTHP
Ballistic Coefficient — .376
C.O.L. — 3.075"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	41.0 gr.	42.6 gr.	44.1 gr.	45.7 gr.	47.3 gr.	
IMR 4320	42.5 gr.	43.7 gr.	44.9 gr.	46.0 gr.	47.2 gr.	
WIN 760	44.8 gr.	46.8 gr.	48.8 gr.			
IMR 4350	45.6 gr.	47.0 gr.	48.4 gr.	49.8 gr.	51.2 gr.	
IMR 4831	47.0 gr.	48.4 gr.	49.8 gr.	51.2 gr.	52.7 gr.	54.1 gr.

See Ballistics Tables on pages 46-47, 47-49, 218-219, Vol. II

 Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .243"

#2450 SP

Ballistic Coefficient — .381
C.O.L. — 3.075"



#2453 BTSP

Ballistic Coefficient — .405
C.O.L. — 3.059"



#2455 RN

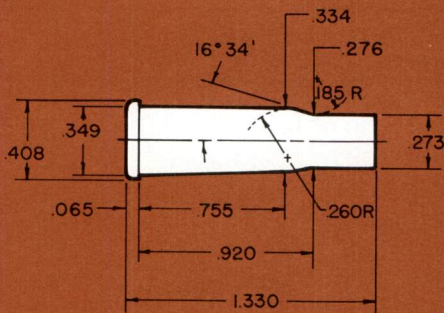
Ballistic Coefficient — .230
C.O.L. — 3.061"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	39.0 gr.	40.6 gr.	42.3 gr.	44.0 gr.		
IMR 4320	40.3 gr.	41.9 gr.	43.4 gr.	45.0 gr.		
WIN 760	43.0 gr.	44.7 gr.	46.3 gr.	48.0 gr.		
IMR 4350	43.2 gr.	44.6 gr.	46.0 gr.	47.5 gr.	48.9 gr.	
IMR 4831	44.5 gr.	46.1 gr.	47.7 gr.	49.3 gr.	50.8 gr.	52.4 gr.

See Ballistics Tables on pages 49-51, 51-53, 53-55, 220-221, 221-223, Vol. II

Indicates maximum load • use with caution



25-20 WCF

RIFLE: MARLIN 1894 CL
BARREL: 22", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: WINCHESTER WSR

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 1.592"
MAX. CASE LENGTH: 1.330"
CASE TRIM LENGTH: 1.320"

The 25-20 WCF is a rimmed bottle necked cartridge that is based on the 32-20 case necked down to 25 caliber. It was introduced about 1893 by Winchester for their lever action Model 92. Prior to the advent of the 22 Hornet and the 218 Bee, it was a very popular varmint round. Marlin's introduction of their 1894 CL lever action in 25-20 may increase its current popularity.

Hornady makes a bullet specifically for the 25-20, the 60 grain Soft Point, a bullet designed to expand effectively at 25-20 velocities; it should be used only for small game and varmints. Tubular magazines prevent the use of any pointed 25 caliber bullets.

60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

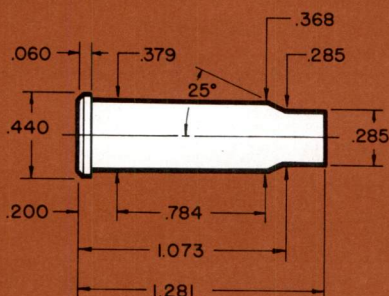
#2510 FP
Ballistic Coefficient — .101
C.O.L. — 1.590"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
2400	6.7 gr.	7.4 gr.	8.2 gr.	8.9 gr.	9.6 gr.	10.3 gr.
H 110	7.2 gr.	7.9 gr.	8.6 gr.	9.3 gr.		
WIN 296	7.5 gr.	8.1 gr.	8.8 gr.	9.5 gr.		
H 4227	8.4 gr.	9.0 gr.	9.7 gr.	10.4 gr.	11.1 gr.	11.8 gr.
IMR 4227	8.4 gr.	9.3 gr.	10.2 gr.	11.1 gr.	12.0 gr.	
AA 1680	9.6 gr.	10.6 gr.	11.7 gr.	12.7 gr.		

See Ballistics Tables on pages 55-58, Vol. II

Indicates maximum load • use with caution



256 WINCHESTER MAGNUM

RIFLE: MARLIN MODEL 62
BARREL: 24", 1 in 14" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSP

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 1.775"
MAX. CASE LENGTH: 1.281"
CASE TRIM LENGTH: 1.271"

The 256 Winchester Magnum is a cartridge based on a necked down 357 Magnum case. It is perhaps most notable for the speed with which it flopped.

Introduced in 1961 in the unique Ruger "Hawkeye" pistol (see the Pistol Data section for loads for use in this firearm), it was originally conceived as a high velocity handgun round suitable for long-range varmint shooting. The 22 Remington Jet had apparently whetted some interest in this kind of shooting, and it was believed that this interest signified a good potential market for new arms and ammo.

Marlin promptly (1962) saw the suitability of the new 256 Winchester Magnum as a rifle cartridge and began chambering its lever action Model 62 for the round. Velocities up to 600 fps higher were possible in the longer barrel, and heavier bullets (75 and 87 grains) could be loaded to better advantage.

Shooters received all these developments with a yawn, and both Ruger and Marlin soon discontinued producing firearms for the 256 Winchester. As a pistol cartridge it was selling into a highly over estimated market; as a rifle cartridge the 256 simply couldn't match the versatility and performance potential of a host of older varmint cartridges. Consequently sales and production were low and, today, one rarely sees a rifle in this caliber.

60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

#2510 FP

Ballistic Coefficient — .101
C.O.L. — 1.560"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
UNIQUE	8.1 gr.	8.6 gr.	9.1 gr.			
HERCO	9.0 gr.	9.5 gr.	10.1 gr.			
2400		12.7 gr.	13.3 gr.	13.9 gr.	14.5 gr.	15.1 gr.
H4227		13.6 gr.	14.2 gr.	14.8 gr.	15.5 gr.	16.1 gr.
H4198	15.3 gr.	15.8 gr.	16.3 gr.			

See Ballistics Tables on pages 55-58, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP

Ballistic Coefficient — .257
C.O.L. — 1.720"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
HERCO	8.7 gr.	9.5 gr.				
H110	10.5 gr.	11.2 gr.				
2400	10.6 gr.	11.5 gr.	12.3 gr.	13.2 gr.	14.0 gr.	
H4227		12.0 gr.	12.7 gr.	13.5 gr.	14.2 gr.	15.0 gr.
H4198	13.9 gr.	14.5 gr.	15.2 gr.	15.8 gr.		

See Ballistics Tables on pages 58-60, Vol. II

Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP
Ballistic Coefficient — .322
C.O.L. — 1.775"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
H110	10.0 gr.	10.7 gr.	11.4 gr.	12.1 gr.		
2400		10.6 gr.	11.4 gr.	12.3 gr.		
H4227			12.1 gr.	12.9 gr.	13.7 gr.	14.6 gr.
H4198	12.8 gr.	13.6 gr.	14.4 gr.			

See Ballistics Tables on pages 60-62, Vol. II

 Indicates maximum load • use with caution



BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 2.600"
MAX. CASE LENGTH: 2.043"
CASE TRIM LENGTH: 2.033"

Two 25 caliber Hornady Bullets are appropriate for reloading the 25-35: our 60 grain Soft Point, a thin jacketed varmint bullet; and our 117 grain Round Nose, a very deadly game bullet which will not only buck the brush well but will expand easily even at low remaining velocities.

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60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

#2510 FP

Ballistic Coefficient — .101
C.O.L. — 2.305"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4198	21.3 gr.	22.1 gr.	23.0 gr.	23.8 gr.		
IMR 3031	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.2 gr.	
BL-C2	25.9 gr.	26.9 gr.	27.9 gr.	28.9 gr.	29.9 gr.	
IMR 4064	26.6 gr.	27.6 gr.	28.7 gr.	29.7 gr.	30.8 gr.	
H4895	27.1 gr.	27.9 gr.	28.7 gr.	29.5 gr.	30.3 gr.	31.1 gr.
IMR 4320	27.1 gr.	28.1 gr.	29.2 gr.	30.2 gr.	31.3 gr.	32.3 gr.

See Ballistics Tables on pages 55-58, Vol. II

117 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .257"

#2550 RN

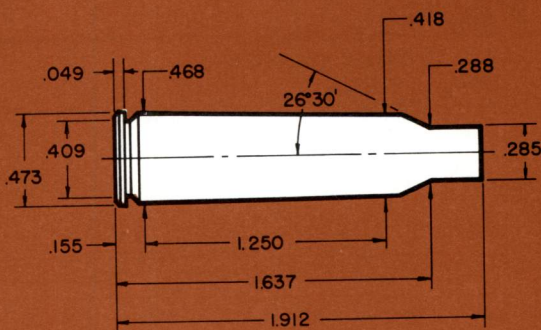
Ballistic Coefficient — .243
C.O.L. — 2.600"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
H4198	17.7 gr.	18.9 gr.	20.0 gr.	21.2 gr.		
IMR 3031	20.0 gr.	21.1 gr.	22.3 gr.	23.4 gr.	24.6 gr.	25.7 gr.
IMR 4064	21.4 gr.	22.5 gr.	23.6 gr.	24.7 gr.	25.8 gr.	
H4895	22.0 gr.	23.1 gr.	24.4 gr.	25.6 gr.	26.8 gr.	
IMR 4320	22.6 gr.	23.7 gr.	24.8 gr.	25.9 gr.	27.0 gr.	28.1 gr.

See Ballistics Tables on pages 63-65, Vol. II

 Indicates maximum load • use with caution



250-3000 SAVAGE

RIFLE: SAVAGE MODEL 99
BARREL: 24", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 2.515"
MAX. CASE LENGTH: 1.912"
CASE TRIM LENGTH: 1.902"

Cartridges were once named by caliber, powder charge, and bullet weight, a system of nomenclature which not only made good sense, but conveyed a lot of information. Thus the designation 45-70-500 represented a 45 caliber cartridge loaded with 70 grains of blackpowder and 500 grain bullet.

The "3000" in the 250 Savage's name has to do with neither powder nor bullet weights, but rather with the velocity original factory cartridges could develop when loaded with 87 grain bullets. Three thousand fps muzzle velocity, like the four minute mile, doesn't seem very fast to us today, but in 1915 when the 250-3000 was introduced it was a noteworthy accomplishment.

Developed by Charles Newton, the 250 Savage was chambered for 48 years after its introduction in the popular Model 99 Savage. During its extended career the 250 Savage has proved an effective varmint and medium game cartridge in both lever and bolt action rifles. Though it managed to remain popular after the introduction of the more powerful 257 Roberts in 1934, it could not withstand competition from the new 6mm's introduced in the mid-1950's. However, in the 1980's, Remington chambered their Limited Production 700 Classic in .250-3000 Savage.

IMR 4320 powder is an excellent choice for reloading the 250 Savage with all 25 caliber Hornadys up to our 117 grain Round Nose. The 1 in 14" twist of the 250-3000, however, will not stabilize our 120 grain HP.

60 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.130**
.257"**#2510 FP****Ballistic Coefficient — .101**
C.O.L. — 2.185"

POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	28.6 gr.	29.5 gr.	30.4 gr.	31.2 gr.	32.1 gr.	
IMR 3031	32.3 gr.	33.2 gr.	34.1 gr.	35.0 gr.	36.0 gr.	
H4895	34.8 gr.	35.8 gr.	36.8 gr.	37.7 gr.	38.7 gr.	
IMR 4064	35.0 gr.	35.9 gr.	36.9 gr.	37.9 gr.	38.8 gr.	
BL-C2	34.9 gr.	35.9 gr.	37.0 gr.	38.0 gr.	39.1 gr.	
IMR 4320	36.5 gr.	37.4 gr.	38.3 gr.	39.2 gr.	40.1 gr.	41.0 gr.
H380	37.1 gr.	38.4 gr.	39.6 gr.	40.8 gr.	42.1 gr.	

*See Ballistics Tables on pages 55-58, Vol. II***75 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.162**
.257"**#2520 HP****Ballistic Coefficient — .257**
C.O.L. — 2.395"

POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	27.4 gr.	28.4 gr.	29.5 gr.	30.6 gr.	
IMR 3031	30.2 gr.	31.4 gr.	32.6 gr.	33.7 gr.	
BL-C2	32.3 gr.	33.7 gr.	35.1 gr.		
H4895	32.7 gr.	33.9 gr.	35.2 gr.	36.4 gr.	
IMR 4064	32.8 gr.	34.1 gr.			
AA 2520	32.8 gr.	34.2 gr.	35.6 gr.	37.0 gr.	38.4 gr.
IMR 4320	33.4 gr.	34.8 gr.	36.2 gr.	37.6 gr.	
RL-15	33.4 gr.	34.4 gr.	35.5 gr.	36.6 gr.	37.7 gr.
H380	35.2 gr.	36.5 gr.	37.8 gr.	39.1 gr.	
IMR 4350	38.7 gr.	39.8 gr.	40.9 gr.	42.0 gr.	

See Ballistics Tables on pages 58-60, Vol. II Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP
Ballistic Coefficient — .322
C.O.L. — 2.435"



POWDER	VELOCITY						
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	28.5 gr.	29.6 gr.	30.7 gr.	31.7 gr.	32.8 gr.		
BL-C2	28.9 gr.	30.3 gr.	31.7 gr.	33.1 gr.	34.5 gr.		
H4895	29.8 gr.	31.0 gr.	32.3 gr.	33.5 gr.	34.8 gr.		
IMR 4320	30.7 gr.	32.0 gr.	33.3 gr.	34.5 gr.	35.8 gr.	37.1 gr.	
RL-15			32.6 gr.	33.8 gr.	35.1 gr.	36.3 gr.	37.6 gr.
AA 2520			31.9 gr.	33.5 gr.	35.1 gr.	36.7 gr.	
H380	31.9 gr.	33.2 gr.	34.5 gr.	35.8 gr.	37.0 gr.		
IMR 4350	36.0 gr.	37.0 gr.	38.0 gr.	39.0 gr.	40.0 gr.		
WIN 760	35.7 gr.	36.9 gr.	38.0 gr.	39.2 gr.	40.3 gr.		
H4831	38.0 gr.	39.2 gr.	40.3 gr.	41.5 gr.	42.6 gr.		

See Ballistics Tables on pages 60-62, Vol. II

250-3000 SAVAGE

100 GRAIN BULLETS:

SECTIONAL DENSITY: .216
DIAMETER: .257"

#2540 SP
Ballistic Coefficient — .357
C.O.L. — 2.455"



POWDER	VELOCITY						
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	27.1 gr.	28.3 gr.	29.5 gr.	30.7 gr.	31.9 gr.		
IMR 4064	27.8 gr.	29.1 gr.	30.4 gr.	31.7 gr.	32.9 gr.		
RL-15				32.1 gr.	33.4 gr.	34.7 gr.	36.0 gr.
AA 2520				30.6 gr.	32.1 gr.	33.6 gr.	35.1 gr.
H4895	28.3 gr.	29.6 gr.	30.9 gr.	32.3 gr.	33.6 gr.		
IMR 4320	28.7 gr.	30.1 gr.	31.4 gr.	32.8 gr.	34.1 gr.	35.5 gr.	
WIN 748	29.9 gr.	31.3 gr.	32.6 gr.	34.0 gr.	35.3 gr.	36.7 gr.	
H380	30.3 gr.	31.7 gr.	33.1 gr.	34.5 gr.	35.9 gr.		
IMR 4350	32.8 gr.	34.1 gr.	35.3 gr.	36.6 gr.	37.9 gr.		
WIN 760	33.0 gr.	34.4 gr.	35.8 gr.	37.2 gr.	38.5 gr.	39.9 gr.	
H4831	35.3 gr.	36.5 gr.	37.7 gr.	39.0 gr.	40.2 gr.		

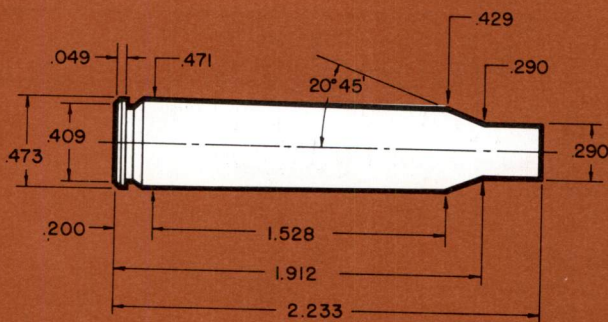
See Ballistics Tables on pages 62-63, 223-224, Vol. II

 Indicates maximum load • use with caution

117 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.253**
.257"**#2550 RN****Ballistic Coefficient — .243**
C.O.L. — 2.515"**#2552 BTSP****Ballistic Coefficient — .391**
C.O.L. — 2.650"

POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	26.0 gr.	27.5 gr.	28.9 gr.	30.4 gr.	31.9 gr.	
IMR 4064	27.6 gr.	28.9 gr.	30.2 gr.	31.5 gr.	32.8 gr.	
H4895	27.9 gr.	29.2 gr.	30.5 gr.	31.8 gr.	33.1 gr.	
RL-15		29.2 gr.	30.7 gr.	32.2 gr.	32.8 gr.	
BL-C2	27.8 gr.	29.3 gr.	30.9 gr.	32.4 gr.	33.9 gr.	
AA 2520		28.9 gr.	30.7 gr.	32.5 gr.		
IMR 4320	29.0 gr.	30.3 gr.	31.7 gr.	33.1 gr.	34.4 gr.	
H380	29.8 gr.	31.3 gr.	32.8 gr.	34.3 gr.		
IMR 4350	33.2 gr.	34.3 gr.	35.4 gr.	36.5 gr.		
WIN 760	32.9 gr.	34.5 gr.	36.0 gr.	37.6 gr.	39.1 gr.	
H4831	35.1 gr.	36.3 gr.	37.5 gr.	38.7 gr.	39.9 gr.	41.1 gr.

*See Ballistics Tables on pages 63-65, 65-67, 224-226, Vol. II***250-3000 SAVAGE** Indicates maximum load • use with caution



257 ROBERTS

RIFLE: WINCHESTER MODEL 70
BARREL: 22", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 210

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 3.100"
MAX. CASE LENGTH: 2.233"
CASE TRIM LENGTH: 2.223"

For about four decades the 257 Roberts has been performing accurately and effectively as a hunting cartridge suitable for everything from varmints to medium sized game.

It began its career as a wildcat development of Ned H. Roberts, a well known writer and experimenter who originally dubbed his new cartridge the 25 Roberts. Remington first introduced it as a commercial round in 1934 and gave it its present form. Though Remington's factory version differed in minor respects from Ned Roberts' design, both are essentially the 7mm x 57mm Mauser case necked down to 25 caliber. Currently, some cases produced are designed for +P pressures in the .257 Roberts, and have a slightly reduced powder capacity. Make sure you segregate your brass as to brand and develop loads accordingly.

The appeal of the 257 Roberts arose from its versatility. Not only would it destroy chucks and coyotes at extended ranges, it still had the power and flat trajectory to be a dependable whitetail or antelope cartridge. The dual-purpose (varmint/game) concept was re-employed in the mid-1950's when both Remington and Winchester introduced 6mm cartridges, and these later developments have diminished the popularity of the 257 Roberts. Many of its fans argue, however, that had light weight sporting rifles been built for the 257, it could easily have held its own against the 6mm's. Some new powders, such as Reloader #19, new rifles, such as the Ruger Model 77 and the Remington Limited Edition Classic Model 700, and +P pressure limits may spark new life into this solid performer.

CAUTION: The following data is for +P pressures in +P cases. This data should only be used in modern firearms designed for this cartridge.

60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

#2510 FP
Ballistic Coefficient — .101
C.O.L. — 2.535"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4198	32.6 gr.	34.1 gr.	35.6 gr.	37.1 gr.	
IMR 3031		37.5 gr.	39.2 gr.	40.9 gr.	42.6 gr.
H4895	37.2 gr.	38.6 gr.	40.0 gr.	41.5 gr.	
RL-12	37.6 gr.	39.2 gr.	40.8 gr.	42.4 gr.	
AA 2460		39.0 gr.	40.7 gr.	42.5 gr.	44.2 gr.
IMR 4320	39.2 gr.	40.7 gr.	42.2 gr.	43.7 gr.	
IMR 4064	40.3 gr.	41.7 gr.	43.0 gr.	44.4 gr.	
IMR 4350	46.5 gr.	47.7 gr.	48.9 gr.	50.1 gr.	
H380	45.3 gr.	47.4 gr.	49.5 gr.	51.5 gr.	

See Ballistics Tables on pages 55-58, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP
Ballistic Coefficient — .257
C.O.L. — 2.775"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
AA 2460		34.0 gr.	36.2 gr.	38.4 gr.	
IMR 3031	33.8 gr.	35.3 gr.	36.9 gr.	38.4 gr.	
H4895	33.3 gr.	35.1 gr.	36.9 gr.	38.7 gr.	
RL-15		37.5 gr.	38.8 gr.	40.0 gr.	41.3 gr.
IMR 4064	36.3 gr.	37.8 gr.	39.3 gr.	40.7 gr.	
IMR 4320	36.3 gr.	37.8 gr.	39.3 gr.		
WIN 760	40.7 gr.	42.3 gr.	43.8 gr.	45.4 gr.	
H380		41.9 gr.	43.7 gr.	45.5 gr.	47.3 gr.
IMR 4350	41.9 gr.	43.3 gr.	44.8 gr.	46.2 gr.	

See Ballistics Tables on pages 58-60, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP
Ballistic Coefficient — .322
C.O.L. — 2.775"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	31.9 gr.	33.0 gr.	34.1 gr.	35.3 gr.	36.4 gr.	37.5 gr.
H4895	32.4 gr.	33.7 gr.	35.0 gr.	36.4 gr.		
RL-15	32.8 gr.	34.3 gr.	35.8 gr.	37.2 gr.	38.7 gr.	40.2 gr.
AA 2520	32.4 gr.	34.1 gr.	35.8 gr.	37.5 gr.	39.2 gr.	
IMR 4320	33.3 gr.	34.7 gr.	36.1 gr.	37.5 gr.		
IMR 4064	33.8 gr.	35.0 gr.	36.3 gr.	37.6 gr.	38.8 gr.	
WIN 760		39.5 gr.	41.0 gr.	42.5 gr.	44.1 gr.	45.6 gr.
H380		39.3 gr.	41.1 gr.	42.8 gr.	44.6 gr.	46.4 gr.

See Ballistics Tables on pages 60-62, Vol. II



Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .216
DIAMETER: .257"

#2540 SP

Ballistic Coefficient — .357

C.O.L. — 2.840"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	31.1 gr.	32.6 gr.	34.1 gr.		
H4895	32.1 gr.	33.6 gr.	35.1 gr.		
AA 2520	31.7 gr.	33.5 gr.	35.2 gr.		
RL-15	32.4 gr.	33.9 gr.	35.4 gr.	36.9 gr.	
IMR 4320	33.0 gr.	34.2 gr.	35.5 gr.		
IMR 4064	33.2 gr.	34.4 gr.	35.6 gr.	36.8 gr.	
IMR 4350	37.8 gr.	39.2 gr.	40.6 gr.	42.1 gr.	43.5 gr.
H380	37.2 gr.	39.0 gr.	40.7 gr.	42.4 gr.	
WIN 760	37.7 gr.	39.2 gr.	40.7 gr.	42.2 gr.	43.7 gr.
H4350	39.2 gr.	40.5 gr.	41.9 gr.	43.2 gr.	44.5 gr.
H4831		41.6 gr.	43.7 gr.	45.7 gr.	47.8 gr.

See Ballistics Tables on pages 62-63, 223-224, Vol. II

Indicates maximum load • use with caution

117 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .257"

#2550 RN
Ballistic Coefficient — .243
C.O.L. — 2.765"



#2552 BTSP
Ballistic Coefficient — .391
C.O.L. — 2.910"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4895	30.2 gr.	31.9 gr.	33.7 gr.			
AA 2520	30.2 gr.	32.2 gr.	34.1 gr.			
IMR 4320	31.3 gr.	32.8 gr.	34.3 gr.			
IMR 4064	31.6 gr.	33.0 gr.	34.5 gr.			
WIN 760	35.2 gr.	36.8 gr.	38.5 gr.	40.1 gr.		
H380	35.0 gr.	36.8 gr.	38.6 gr.	40.4 gr.		
RL-19	37.2 gr.	38.9 gr.	40.7 gr.	42.4 gr.	44.1 gr.	45.9 gr.
H4831	37.3 gr.	39.2 gr.	41.1 gr.	43.0 gr.		
IMR 7828	40.4 gr.	42.0 gr.	43.5 gr.	45.0 gr.		

See Ballistics Tables on pages 63-65, 65-67, 224-226, 250-251, Vol. II



Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY: .260
DIAMETER: .257"

#2560 HP
Ballistic Coefficient — .394
C.O.L. — 2.980"

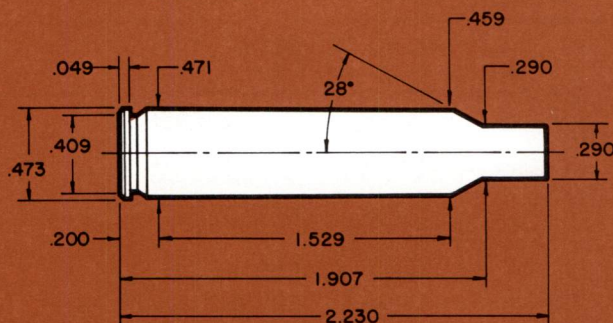


POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
WIN 760	35.3 gr.	37.0 gr.	38.7 gr.	40.4 gr.	
IMR 4350	35.4 gr.	37.1 gr.	38.8 gr.		
H380	35.4 gr.	37.1 gr.	38.8 gr.	40.6 gr.	
H4831	36.7 gr.	38.6 gr.	40.5 gr.	42.4 gr.	
RL-19		39.9 gr.	41.5 gr.	43.1 gr.	44.7 gr.
IMR 7828	39.0 gr.	40.8 gr.	42.6 gr.	44.4 gr.	
AA 3100	39.9 gr.	41.7 gr.	43.5 gr.		

See Ballistics Tables on pages 67-69, 226-227, 251-252, Vol. II



Indicates maximum load • use with caution



257 ROBERTS IMPROVED

RIFLE: WINCHESTER MODEL 70
BARREL: 24", 1 in 10" TWIST
CASE: REMINGTON
PRIMER: RWS

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 3.310"
MAX. CASE LENGTH: 2.230"
CASE TRIM LENGTH: 2.220"

The process of "improving" a standard factory cartridge is a simple one; case capacity is enlarged by increasing the shoulder angle and (usually) by reducing the body taper. When fired in an improved chamber, factory ammunition fireforms to the new case dimensions, though at a slight loss in velocity. With greater powder capacity, the improved case generally — though not always — has a higher velocity potential.

P.O. Ackley, master gunsmith, experimenter, and arms authority, has sparked considerable interest in improved cartridges. The 257 Improved is an excellent performer, adding up to 200 fps velocity over its factory cousin. Not the least of its advantages, according to Ackley, is the fact that standard 257 Roberts factory ammunition can be used in an improved rifle should the need arise. Most other 25 caliber wildcats do not enjoy this flexibility.

The 257 Improved is all that the 257 Roberts is — and a bit more. (Our version, incidentally, is the RCBS design rather than Ackley's and features a 28° shoulder rather than his 40°. Loading information is similar but approach maximum loads with care.) A comparison of the loading data for both cartridges will show our very satisfactory experience with it. Suitable for a wide variety of North American game, the 257 Improved is also an excellent varmint cartridge which thrives on 75 and 87 grain Hornadys.

60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

#2510 FP

Ballistic Coefficient — .101
C.O.L. — 2.530"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4198		33.5 gr.	34.8 gr.	36.1 gr.	37.5 gr.	
IMR 3031	38.3 gr.	39.5 gr.	40.7 gr.	41.8 gr.	43.0 gr.	44.2 gr.
H4895	40.6 gr.	41.9 gr.	43.3 gr.	44.6 gr.	45.9 gr.	
IMR 4064	41.5 gr.	42.7 gr.	43.9 gr.	45.1 gr.	46.2 gr.	47.4 gr.
IMR 4320	41.9 gr.	43.2 gr.	44.4 gr.	45.6 gr.	46.9 gr.	48.1 gr.
H380	43.6 gr.	45.3 gr.	47.1 gr.	48.9 gr.	50.7 gr.	
IMR 4350	47.9 gr.	49.1 gr.	50.3 gr.	51.6 gr.		
WIN 760	47.7 gr.	49.2 gr.	50.7 gr.	52.2 gr.	53.6 gr.	55.1 gr.

See Ballistics Tables on pages 55-58, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP

Ballistic Coefficient — .257
C.O.L. — 2.790"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	32.2 gr.	33.7 gr.	35.2 gr.	36.7 gr.	38.2 gr.	
IMR 3031	36.0 gr.	37.3 gr.	38.5 gr.	39.8 gr.	41.1 gr.	
H4895	38.0 gr.	39.3 gr.	40.7 gr.	42.0 gr.	43.3 gr.	44.6 gr.
IMR 4064	38.5 gr.	39.8 gr.	41.1 gr.	42.4 gr.	43.7 gr.	45.1 gr.
IMR 4320	39.5 gr.	40.8 gr.	42.1 gr.	43.3 gr.	44.6 gr.	45.8 gr.
H380		42.7 gr.	44.3 gr.	46.0 gr.	47.6 gr.	49.3 gr.
WIN 760	44.4 gr.	46.1 gr.	47.8 gr.	49.5 gr.	51.3 gr.	53.0 gr.

See Ballistics Tables on pages 58-60, Vol. II

 Indicates maximum load - use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP
Ballistic Coefficient — .322
C.O.L. — 2.845"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 3031	35.9 gr.	37.4 gr.	38.9 gr.	40.3 gr.	
H4895	37.6 gr.	39.1 gr.	40.5 gr.	41.9 gr.	43.4 gr.
IMR 4064	38.0 gr.	39.4 gr.	40.8 gr.	42.2 gr.	
IMR 4320	38.6 gr.	40.0 gr.	41.5 gr.	43.0 gr.	44.4 gr.
H380	40.9 gr.	42.5 gr.	44.1 gr.	45.7 gr.	
IMR 4350		45.0 gr.	46.4 gr.	47.8 gr.	49.2 gr.
WIN 760		45.4 gr.	47.3 gr.	49.2 gr.	51.1 gr.
H4831	47.7 gr.	49.3 gr.	51.0 gr.	52.6 gr.	

See Ballistics Tables on pages 60-62, Vol. II

100 GRAIN BULLETS:

SECTIONAL DENSITY: .216
DIAMETER: .257"

#2540 SP
Ballistic Coefficient — .357
C.O.L. — 2.840"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	33.4 gr.	35.0 gr.	36.6 gr.	38.2 gr.		
H4895	34.7 gr.	36.2 gr.	37.7 gr.	39.2 gr.	40.7 gr.	
IMR 4064	35.2 gr.	36.7 gr.	38.2 gr.	39.7 gr.	41.1 gr.	
IMR 4320	35.7 gr.	37.3 gr.	38.8 gr.	40.4 gr.	41.9 gr.	
H380		39.3 gr.	41.0 gr.	42.7 gr.		
IMR 4350		40.7 gr.	42.3 gr.	43.8 gr.	45.3 gr.	
WIN 760	43.0 gr.	44.6 gr.	46.2 gr.	47.8 gr.	49.5 gr.	51.1 gr.
H4831	43.8 gr.	45.4 gr.	46.9 gr.	48.5 gr.	50.0 gr.	

See Ballistics Tables on pages 62-63, 223-224, Vol. II

 Indicates maximum load • use with caution

117 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .257"

#2550 RN

Ballistic Coefficient — .243
C.O.L. — 2.830"



#2552 BTSP

Ballistic Coefficient — .391
C.O.L. — 2.965"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	31.0 gr.	32.7 gr.	34.4 gr.	36.0 gr.	37.7 gr.	
H4895	32.1 gr.	33.8 gr.	35.4 gr.	37.0 gr.	38.6 gr.	
IMR 4064	32.4 gr.	34.0 gr.	35.7 gr.	37.4 gr.	39.1 gr.	
IMR 4320	32.8 gr.	34.6 gr.	36.3 gr.	38.1 gr.	39.9 gr.	
H380	35.1 gr.	36.7 gr.	38.3 gr.	39.9 gr.	41.5 gr.	
IMR 4350	36.4 gr.	37.9 gr.	39.5 gr.	41.1 gr.	42.7 gr.	44.3 gr.
WIN 760		39.1 gr.	41.0 gr.	42.8 gr.	44.7 gr.	46.6 gr.
H4831	39.7 gr.	41.3 gr.	43.0 gr.	44.7 gr.	46.4 gr.	48.1 gr.

See Ballistics Tables on pages 63-65, 65-67, 224-226, 250-251, Vol. II

257 ROBERTS IMPROVED



Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY: .260
DIAMETER: .257"

#2560 HP
Ballistic Coefficient — .394
C.O.L. — 2.990"

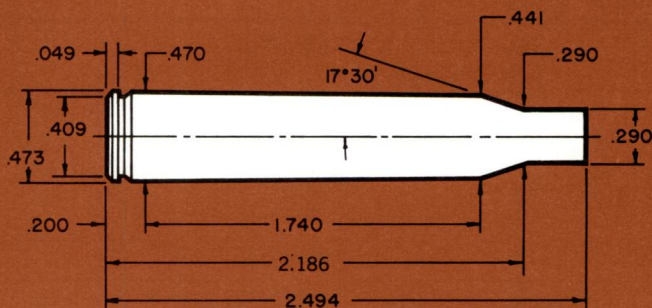


POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	32.1 gr.	33.6 gr.	35.2 gr.	36.8 gr.	38.3 gr.	
IMR 4064	33.3 gr.	34.9 gr.	36.5 gr.	38.0 gr.	39.6 gr.	
H4894	34.1 gr.	35.6 gr.	37.2 gr.	38.7 gr.	40.3 gr.	
IMR 4320	34.7 gr.	36.3 gr.	37.9 gr.	39.5 gr.	41.0 gr.	
H380	35.2 gr.	36.9 gr.	38.7 gr.	40.5 gr.	42.3 gr.	
IMR 4350	36.4 gr.	38.2 gr.	39.9 gr.	41.7 gr.	43.5 gr.	45.3 gr.
WIN 760	37.5 gr.	39.3 gr.	41.0 gr.	42.8 gr.	44.5 gr.	46.2 gr.
H4831	40.7 gr.	42.7 gr.	44.8 gr.	46.9 gr.	49.0 gr.	

See Ballistics Tables on pages 67-69, 226-227, 251-252, Vol. II



Indicates maximum load • use with caution



25-06 REMINGTON

RIFLE: REMINGTON 700
BARREL: 24", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 3.250"
MAX. CASE LENGTH: 2.494"
CASE TRIM LENGTH: 2.484"

Necking the 30-06 up and down has resulted in some very fine sporting cartridges. The 25-06 is one of these. In 1969, forty-nine years after A. O. Niedner introduced this wildcat, Remington adopted the round and made it commercially available in their Model 700 bolt action rifles.

In essence, the 25-06 has kept the 25 caliber alive for the past decades. With the advent of the popular 6mm Remington and 243 Winchester, the 25's rapidly lost ground. Hornady introduced a 120 grain Hollow Point bullet with the 25-06 in mind. As a result, this bullet added appreciably to the ballistics of the 25-06 and created a fine big game stopper.

The 25-06 has ample power for making long shots at deer and antelope, with some hunters claiming that it is even adequate for elk. However, we feel its best use is on deer and antelope sized game. As a varmint round, the 25-06 is outstanding. It is truly a multi-purpose caliber. A properly scoped 25-06 with Hornady varmint bullets is easily capable of 300 to 400 yard varminting.

In our testing, the powders that performed the best with the 25-06 were Reloder 22 and IMR 4831. These slower burning powders perform best when loaded in the region ranging between 90% of maximum to maximum.

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP
Ballistic Coefficient — .257
C.O.L. — 3.010"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4895	41.6 gr.	43.5 gr.	45.4 gr.	47.3 gr.	
RL-15	44.9 gr.	46.2 gr.	47.6 gr.	48.9 gr.	50.3 gr.
IMR 4064	44.2 gr.	46.1 gr.	48.1 gr.	50.0 gr.	51.9 gr.
WIN 760	50.0 gr.	51.4 gr.	52.9 gr.	54.4 gr.	55.9 gr.
H414	50.3 gr.	51.8 gr.	53.3 gr.	54.7 gr.	56.2 gr.
IMR 4350	50.6 gr.	52.3 gr.	54.1 gr.	55.9 gr.	
IMR 4831	53.7 gr.	55.3 gr.	56.9 gr.	58.8 gr.	60.1 gr.

See Ballistics Tables on pages 58-60, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP
Ballistic Coefficient — .322
C.O.L. — 3.120"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4895	37.1 gr.	39.3 gr.	41.9 gr.	44.4 gr.		
IMR 4064	41.5 gr.	43.4 gr.	45.2 gr.	47.1 gr.		
IMR 4350	47.7 gr.	49.5 gr.	51.3 gr.	53.0 gr.	54.8 gr.	
IMR 4831	50.5 gr.	52.1 gr.	53.8 gr.	55.5 gr.	57.1 gr.	58.8 gr.
H4831		52.0 gr.	54.1 gr.	56.2 gr.	58.2 gr.	60.3 gr.
RL-19		53.8 gr.	55.4 gr.	57.0 gr.	58.5 gr.	60.1 gr.
AA 3100	53.7 gr.	55.6 gr.	57.4 gr.			
IMR 7828	56.3 gr.	58.0 gr.	59.6 gr.	61.3 gr.		

See Ballistics Tables on pages 60-62, Vol. II

 Indicates maximum load - use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .216
DIAMETER: .257"

#2540 SP

Ballistic Coefficient — .357
C.O.L. — 3.120"



25-06 REMINGTON

POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
H4895	37.9 gr.	39.8 gr.	41.7 gr.	43.6 gr.		
IMR 4320	40.0 gr.	41.8 gr.	43.5 gr.			
IMR 4064	40.3 gr.	42.0 gr.	43.7 gr.	45.4 gr.		
IMR 4350	45.7 gr.	47.5 gr.	49.2 gr.	51.0 gr.	52.8 gr.	
IMR 4831	47.8 gr.	49.3 gr.	50.7 gr.	52.2 gr.	53.6 gr.	
H4831		49.5 gr.	51.7 gr.	53.8 gr.	55.9 gr.	
RL-22		50.2 gr.	52.2 gr.	54.1 gr.	56.1 gr.	58.1 gr.
AA 3100	50.3 gr.	52.2 gr.	54.0 gr.	55.9 gr.	57.8 gr.	
IMR 7828	52.8 gr.	54.4 gr.	56.0 gr.	57.6 gr.	59.3 gr.	

See Ballistics Tables on pages 62-63, 223-224, Vol. II



Indicates maximum load • use with caution

117 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .257"

#2550 RN

Ballistic Coefficient — .243
C.O.L. — 3.050"



#2552 BTSP

Ballistic Coefficient — .391
C.O.L. — 3.165"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H4895	37.6 gr.	39.8 gr.	42.0 gr.			
IMR 4064	39.6 gr.	41.3 gr.	43.0 gr.			
IMR 4350	43.6 gr.	45.3 gr.	47.1 gr.			
IMR 4831		45.7 gr.	47.7 gr.	49.7 gr.	51.7 gr.	53.7 gr.
H4831		47.8 gr.	50.0 gr.	52.3 gr.	54.5 gr.	
RL-22		49.5 gr.	51.2 gr.	53.0 gr.	54.8 gr.	56.5 gr.
AA 3100	49.5 gr.	51.2 gr.	53.0 gr.	54.8 gr.	56.5 gr.	
IMR 7828		52.5 gr.	54.2 gr.	56.0 gr.	57.7 gr.	59.5 gr.

See Ballistics Tables on pages 63-65, 65-67, 224-226, 250-251, Vol. II

 Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY: .260
DIAMETER: .257"

#2560 HP

Ballistic Coefficient — .394
C.O.L. — 3.240"

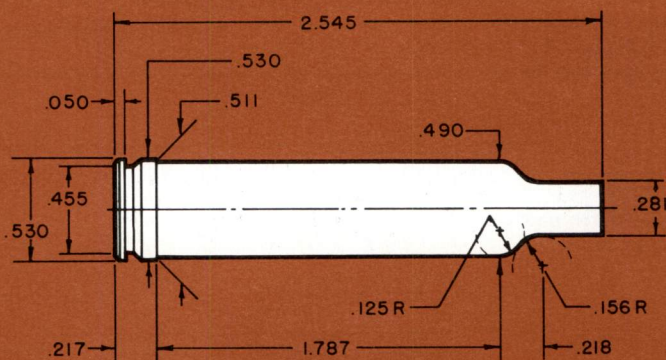


POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4895	37.9 gr.	40.0 gr.			
IMR 4320	38.6 gr.	40.3 gr.	41.9 gr.		
IMR 4064	38.9 gr.	40.7 gr.	42.6 gr.	44.4 gr.	
IMR 4350	42.4 gr.	44.2 gr.	46.1 gr.	47.9 gr.	
IMR 4831	42.9 gr.	45.0 gr.	47.0 gr.	49.1 gr.	
H4831	44.5 gr.	46.8 gr.	49.2 gr.	51.5 gr.	
RL-22		47.7 gr.	49.7 gr.	51.6 gr.	53.5 gr.
AA 3100	47.8 gr.	49.7 gr.	51.7 gr.	53.6 gr.	
IMR 7828	49.1 gr.	51.0 gr.	52.9 gr.	54.9 gr.	

See Ballistics Tables on pages 67-69, 226-227, Vol. II



Indicates maximum load • use with caution



257 WEATHERBY MAGNUM

RIFLE: WEATHERBY
BARREL: 24", 1 in 10" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 3.300"
MAX. CASE LENGTH: 2.545"
CASE TRIM LENGTH: 2.535"

In 1944 Roy Weatherby shortened a 300 H&H Magnum case, necked it down to 25 caliber, and gave the shoulder the characteristic Weatherby double radius resulting in the 257 Weatherby Magnum. The 257 Weatherby case has more powder capacity than the 25-06 and thus produces 100 to 200 fps more velocity.

This cartridge is a superb choice for hunting deer, antelope, sheep, and even goat. Many elk sized animals have been taken with this cartridge, but it is at its best on deer sized game. As a varmint, the 257 Weatherby is a good performer. With the 87 grain Spire Point traveling at 3700 fps and zeroed at 200 yards, the bullet only drops 4.6" at 300 yards.

The early 257 Weatherby Magnums had 1:12" twists and would not stabilize the 120 grain Hollow Point, but this problem no longer exists as all 257 Weatherby Magnums are now made with 1:10" twists.

The slower burning propellents are the best choices for large capacity small bore cartridges. All powders listed performed very well, especially Reloder 22.

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP

Ballistic Coefficient — .257
C.O.L. — 3.140"



POWDER	VELOCITY				
	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4350	62.0 gr.	63.6 gr.	65.2 gr.	66.7 gr.	
IMR 4831	65.0 gr.	66.6 gr.	68.1 gr.	69.7 gr.	
H4350	66.6 gr.	68.1 gr.	69.6 gr.		
RL-22	70.3 gr.	71.9 gr.	73.5 gr.	75.1 gr.	76.8 gr.
H4831	71.2 gr.	73.0 gr.	74.8 gr.		

See Ballistics Tables on pages 58-60, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

#2530 SP

Ballistic Coefficient — .322
C.O.L. — 3.185"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
WIN 760		59.9 gr.	61.8 gr.	63.6 gr.	65.4 gr.
IMR 4350	58.8 gr.	60.5 gr.	62.1 gr.	63.8 gr.	65.4 gr.
IMR 4831	62.6 gr.	64.1 gr.	65.7 gr.	67.2 gr.	
H4350	64.0 gr.	65.8 gr.	67.6 gr.	69.4 gr.	
RL-22	67.3 gr.	69.1 gr.	71.0 gr.	72.9 gr.	74.8 gr.
H4831	67.9 gr.	69.7 gr.	71.6 gr.	73.4 gr.	
IMR 7828	70.1 gr.	72.0 gr.	73.8 gr.	75.6 gr.	

See Ballistics Tables on pages 60-62, Vol. II

 Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .216
DIAMETER: .257"

#2540 SP
Ballistic Coefficient — .357
C.O.L. — 3.185"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4350	55.8 gr.	57.8 gr.	59.8 gr.	61.8 gr.	63.7 gr.	65.7 gr.
IMR 4831	59.9 gr.	61.4 gr.	62.9 gr.	64.4 gr.		
H4350	61.3 gr.	63.1 gr.	64.8 gr.			
RL-22		66.4 gr.	68.1 gr.	69.7 gr.	71.4 gr.	73.0 gr.
H4831	64.5 gr.	66.5 gr.	68.4 gr.	70.4 gr.		
IMR 7828	66.1 gr.	68.1 gr.	70.1 gr.	72.1 gr.		
H870	73.0 gr.	75.2 gr.	77.5 gr.	79.8 gr.		

See Ballistics Tables on pages 62-63, 223-224, Vol. II

117 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .257"

#2550 RN
Ballistic Coefficient — .243
C.O.L. — 3.215"



#2552 BTSP
Ballistic Coefficient — .391
C.O.L. — 3.215"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4350	55.6 gr.	57.7 gr.	59.8 gr.			
IMR 4831	57.7 gr.	59.8 gr.	61.9 gr.			
H4350	58.8 gr.	60.8 gr.	62.8 gr.	64.9 gr.		
RL-22		62.2 gr.	64.2 gr.	66.3 gr.	68.4 gr.	70.4 gr.
H4831	62.4 gr.	64.1 gr.	65.9 gr.	67.6 gr.		
IMR 7828	63.3 gr.	65.2 gr.	67.1 gr.	68.9 gr.	70.8 gr.	
AA 8700	71.1 gr.	73.2 gr.	75.3 gr.	77.4 gr.		
H870	72.0 gr.	74.5 gr.	76.9 gr.			

See Ballistics Tables on pages 63-65, 65-67, 224-226, 250-251, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY: .260
DIAMETER: .257"

#2560 HP

Ballistic Coefficient — .394

C.O.L. — 3.300"

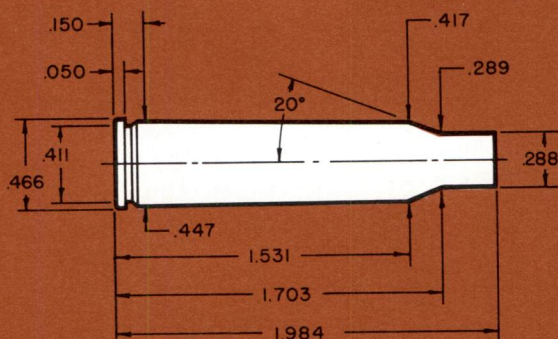


POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4350	50.6 gr.	52.7 gr.	54.8 gr.	56.9 gr.	59.0 gr.	
IMR 4831	54.5 gr.	56.6 gr.	58.6 gr.	60.7 gr.	62.7 gr.	
H4350		59.3 gr.	61.2 gr.	63.2 gr.		
RL-22			62.6 gr.	64.8 gr.	67.0 gr.	69.2 gr.
H4831	59.9 gr.	62.0 gr.	64.1 gr.	66.3 gr.	68.4 gr.	
IMR 7828	60.7 gr.	62.9 gr.	65.0 gr.	67.1 gr.	69.3 gr.	
H870		69.3 gr.	71.5 gr.	73.7 gr.	75.9 gr.	
AA 8700	69.3 gr.	71.4 gr.	73.5 gr.	75.6 gr.		

See Ballistics Tables on pages 67-69, 226-227, 251-252, Vol. II



Indicates maximum load • use with caution



6.5mm JAPANESE

RIFLE: ARISAKA TYPE 38
BARREL: 32", 1 in 9" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 2.855"
MAX. CASE LENGTH: 1.984"
CASE TRIM LENGTH: 1.974"

The 6.5mm Japanese, or 6.5mm x 50mm Arisaka, was the Japanese service cartridge introduced in 1897 and brought out in 1905 in that nation's Type 38 rifle. No factory sporting rifle has ever been chambered for the cartridge.

First brought into America after WW II by returning GI's and subsequently imported in large numbers by surplus arms dealers, the 6.5mm Japanese has been readily adapted to sporting use. The Type 38 has an extremely strong, modified Mauser design action which permits loading the 6.5mm Japanese cartridge to its full potential. However, since many of these rifles have seen considerable use, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

The military cartridge was loaded with a 139 grain bullet to a velocity of 2500 fps, approximately the same power as other 6.5mm's of the period. With the Hornady 6.5mm 140 grain Spire Point, four different powders can be used to reach 2600 fps (though the wise handloader should here, as always, approach maximum loads with caution). Boxer primed Norma cases are now available in this country, and with the wide assortment of Hornady 6.5mm bullets available for loading this cartridge, the 6.5mm Japanese should continue to see effective use on game up to deer and black bear size.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP

Ballistic Coefficient — .358
C.O.L. — 2.770"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		30.4 gr.	31.6 gr.	32.8 gr.	34.0 gr.	
IMR 4064	31.3 gr.	32.5 gr.	33.6 gr.	34.8 gr.	35.9 gr.	37.1 gr.
H4895	31.5 gr.	32.7 gr.	33.8 gr.	35.0 gr.	36.1 gr.	37.3 gr.
IMR 4320	31.9 gr.	33.2 gr.	34.4 gr.	35.6 gr.	36.8 gr.	
H380	33.3 gr.	34.5 gr.	35.7 gr.	36.8 gr.	38.0 gr.	
IMR 4350	36.5 gr.	37.6 gr.	38.8 gr.	39.9 gr.	41.0 gr.	
H4831	38.7 gr.	39.8 gr.	40.8 gr.			

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP

Ballistic Coefficient — .445
C.O.L. — 2.845"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	27.8 gr.	28.9 gr.	30.0 gr.	31.1 gr.	32.2 gr.	
IMR 4064		30.0 gr.	31.4 gr.	32.7 gr.	34.0 gr.	35.4 gr.
H4895		30.2 gr.	31.6 gr.	33.0 gr.	34.4 gr.	
IMR 4320		30.5 gr.	32.0 gr.	33.6 gr.	35.2 gr.	36.7 gr.
H380	30.6 gr.	31.9 gr.	33.3 gr.	34.6 gr.	35.9 gr.	
IMR 4350	33.8 gr.	35.0 gr.	36.2 gr.	37.3 gr.	38.3 gr.	39.6 gr.
H4831	36.0 gr.	37.3 gr.	38.5 gr.	39.8 gr.	41.0 gr.	

See Ballistics Tables on pages 71-74, Vol. II

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP

Ballistic Coefficient — .465
C.O.L. — 2.800"



#2633 BTHP MATCH

Ballistic Coefficient — .484
C.O.L. — 2.800"



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	27.3 gr.	28.3 gr.	29.4 gr.	30.5 gr.	31.5 gr.	
IMR 4064	28.6 gr.	29.7 gr.	30.8 gr.	31.8 gr.	32.9 gr.	34.0 gr.
H4895	28.6 gr.	29.8 gr.	31.0 gr.	32.3 gr.	33.5 gr.	34.7 gr.
IMR 4320		29.4 gr.	31.0 gr.	32.7 gr.	34.3 gr.	
H380	29.6 gr.	31.1 gr.	32.5 gr.	34.0 gr.		
IMR 4350	32.1 gr.	33.6 gr.	35.0 gr.	36.4 gr.	37.8 gr.	39.2 gr.
H4831	34.2 gr.	35.5 gr.	36.8 gr.	38.1 gr.	39.4 gr.	40.7 gr.

See Ballistics Tables on pages 74-76, 76-78, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN

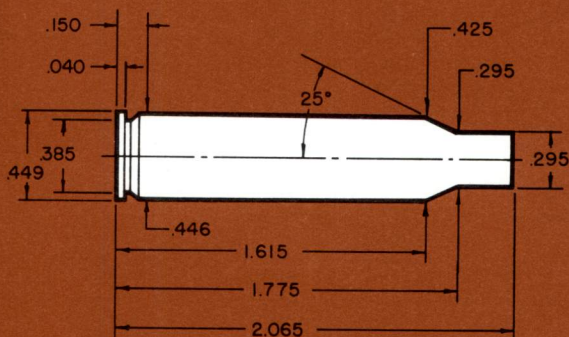
Ballistic Coefficient — .283
C.O.L. — 2.855"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	25.6 gr.	26.9 gr.	28.2 gr.	29.4 gr.	30.7 gr.	31.9 gr.
IMR 4064		27.5 gr.	29.0 gr.	30.6 gr.	32.1 gr.	33.6 gr.
H4895		28.0 gr.	29.5 gr.	31.0 gr.	32.5 gr.	34.0 gr.
IMR 4320				30.8 gr.	32.5 gr.	34.1 gr.
H380			30.4 gr.	32.0 gr.	33.7 gr.	
IMR 4350	29.7 gr.	31.2 gr.	32.7 gr.	34.2 gr.	35.7 gr.	37.2 gr.
H4831	32.3 gr.	33.5 gr.	34.8 gr.	36.1 gr.	37.3 gr.	38.6 gr.

See Ballistics Tables on pages 79-80, Vol. II

Indicates maximum load • use with caution



6.5mm CARCANO

RIFLE: M1891 TS CARBINE (TERNI)
BARREL: 21" GAIN TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 2.935"
MAX. CASE LENGTH: 2.065"
CASE TRIM LENGTH: 2.055"

The post-WWII importations of surplus Italian Model 91 rifles chambered for the 6.5mm Carcano cartridge (6.5mm x 52mm Mannlicher-Carcano), and their subsequent sale to American shooters at justifiably low prices has given wide distribution to this firearm.

In retrospect, the prices may not have been low enough. The action of the 6.5mm Carcano is sloppy and lacks the extra margin of safety of the best military actions; the finish of the rifle is crude. As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended. Scope mounting is difficult and essentially not worth the effort.

Surplus stocks of the 6.5mm Carcano appear to have been rediscovered and we suspect the use of this cartridge will continue. For those shooters fortunate enough to have acquired a 6.5mm Carcano that is reasonably accurate and thus worth reloading, Norma supplies good cartridge cases. The reloading tables which follow are the most extensive available on this cartridge.

The 6.5mm Italian cartridge is very similar in design and performance to the 6.5mm x 54mm Mannlicher-Schoenauer.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP
Ballistic Coefficient — .358
C.O.L. — 2.835"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	27.8 gr.	28.9 gr.	29.9 gr.	31.0 gr.	32.0 gr.
BL-C2	29.2 gr.	30.4 gr.	31.6 gr.	32.8 gr.	
IMR 4064	29.7 gr.	30.9 gr.	32.0 gr.	33.1 gr.	
H4895	29.5 gr.	30.8 gr.	32.2 gr.	33.6 gr.	
IMR 4320	30.0 gr.	31.3 gr.	32.7 gr.	34.0 gr.	35.4 gr.
H380	30.3 gr.	31.8 gr.	33.4 gr.	34.9 gr.	36.5 gr.
IMR 4350	36.0 gr.	37.4 gr.	38.8 gr.	40.2 gr.	41.6 gr.
H4831	38.8 gr.	40.2 gr.	41.6 gr.	43.0 gr.	

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP
Ballistic Coefficient — .445
C.O.L. — 2.935"



POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
IMR 3031	25.5 gr.	26.9 gr.	28.3 gr.	29.7 gr.	
BL-C2	27.8 gr.	28.9 gr.	30.0 gr.	31.0 gr.	32.1 gr.
IMR 4064	27.5 gr.	28.8 gr.	30.2 gr.	31.5 gr.	32.9 gr.
H4895	27.2 gr.	28.8 gr.	30.3 gr.	31.9 gr.	33.5 gr.
H380	28.5 gr.	30.0 gr.	31.4 gr.		
IMR 4320	28.8 gr.	30.1 gr.	31.5 gr.	32.9 gr.	
IMR 4350	33.0 gr.	34.3 gr.	35.6 gr.		
H450	35.7 gr.	37.0 gr.	38.3 gr.	39.6 gr.	40.8 gr.
H4831	36.6 gr.	37.9 gr.	39.2 gr.	40.4 gr.	

See Ballistics Tables on pages 71-74, Vol. II

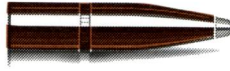
 Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP

BALLISTIC COEFFICIENT — .465
C.O.L. — 2.915"



#2633 BTHP MATCH

BALLISTIC COEFFICIENT — .484
C.O.L. — 2.915"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	24.9 gr.	26.2 gr.	27.5 gr.	28.8 gr.	
BL-C2	25.9 gr.	27.0 gr.	28.2 gr.	29.4 gr.	30.6 gr.
H4895		27.8 gr.	29.3 gr.	30.8 gr.	32.3 gr.
IMR 4064	26.7 gr.	28.2 gr.	29.7 gr.	31.2 gr.	32.7 gr.
IMR 4320		28.9 gr.	30.3 gr.	31.7 gr.	33.1 gr.
H380	27.5 gr.	29.1 gr.	30.7 gr.	32.3 gr.	33.8 gr.
IMR 4350		33.3 gr.	34.9 gr.	36.4 gr.	37.9 gr.
H4831	35.6 gr.	36.8 gr.	37.9 gr.	39.1 gr.	40.3 gr.

See Ballistics Tables on pages 74-76, 76-78, Vol. II

6.5mm CARCANO

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN
Ballistic Coefficient — .283
C.O.L. — 2.935"

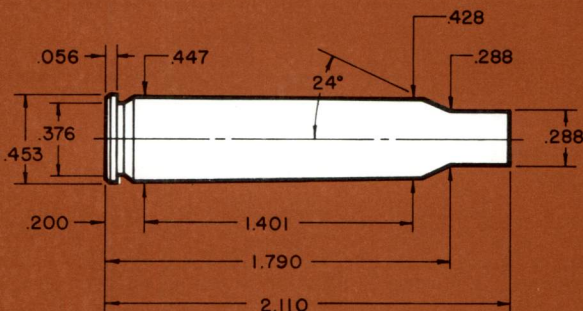


POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	25.4 gr.	27.0 gr.	28.5 gr.	30.0 gr.	
BL-C2	26.4 gr.	27.7 gr.	29.0 gr.	30.3 gr.	
IMR 4064	27.3 gr.	28.8 gr.	30.3 gr.		
H4895	27.2 gr.	28.8 gr.	30.4 gr.	32.0 gr.	
IMR 4320	27.6 gr.	29.2 gr.	30.9 gr.	32.5 gr.	
H380	28.6 gr.	30.4 gr.	32.1 gr.	33.8 gr.	
IMR 4350		34.2 gr.	35.6 gr.	37.0 gr.	38.5 gr.
H4831	35.3 gr.	36.7 gr.	38.0 gr.	39.4 gr.	

See Ballistics Tables on pages 79-80, Vol. II



Indicates maximum load • use with caution



6.5 x 54mm MANNLICHER-SCHOENAUER

RIFLE: STEYR CARBINE
BARREL: 18", 1 in 8½" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 2.970"
MAX. CASE LENGTH: 2.110"
CASE TRIM LENGTH: 2.100"

Though never an especially popular hunting cartridge in the U.S., the 6.5mm x 54mm Mannlicher-Schoenauer cartridge was loaded by American firms until about 1940, and many European made rifles for this cartridge are still in regular use today.

Prized for its efficient spiral magazine and smooth action, the Mannlicher-Schoenauer rifle has a split bridge which poses problems for scope mounting. Paul Jaeger, Williams, Redfield, Pachmayr, and Leupold, however, made special side mounts to overcome the difficulty.

First adopted by the Greek army in 1903, the 6.5 x 54 M-S cartridge has been used by hunters throughout the world. If you are loading for an older military rifle, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended. Reloadable Boxer primed cartridge brass is available from Norma on the domestic market, and Stoeger Arms imports both rifles and ammunition in 6.5 x 54 M-S caliber.

There is an outstanding selection of Hornady 6.5mm bullets suitable for loading in this cartridge, all the way from the long, deep penetrating 160 grain Round Nose down to the explosive 100 grain Spire Point, an excellent choice for varmint shooting with the 6.5 x 54 M-S.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP
Ballistic Coefficient — .358
C.O.L. — 2.870"



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	27.0 gr.	28.6 gr.	30.1 gr.	31.6 gr.	33.2 gr.	
IMR 4064	29.5 gr.	31.1 gr.	32.6 gr.	34.2 gr.	35.8 gr.	
H4895	29.7 gr.	31.3 gr.	32.9 gr.	34.4 gr.	35.9 gr.	37.5 gr.
IMR 4320	30.5 gr.	31.9 gr.	33.3 gr.	34.7 gr.	36.1 gr.	37.5 gr.
H380	31.2 gr.	32.6 gr.	34.1 gr.	35.6 gr.	37.1 gr.	38.5 gr.
IMR 4350	36.3 gr.	37.7 gr.	39.0 gr.	40.4 gr.	41.7 gr.	
H4831	39.2 gr.	40.6 gr.	42.0 gr.	43.4 gr.	44.7 gr.	

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP
Ballistic Coefficient — .445
C.O.L. — 2.970"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	26.7 gr.	28.2 gr.	29.8 gr.	31.3 gr.	32.8 gr.	
H4895	28.2 gr.	29.8 gr.	31.3 gr.	32.9 gr.	34.4 gr.	
IMR 4064	28.4 gr.	30.0 gr.	31.6 gr.	33.2 gr.	34.8 gr.	
IMR 4320	28.5 gr.	30.2 gr.	31.8 gr.	33.4 gr.	35.1 gr.	
H380	30.2 gr.	31.7 gr.	33.3 gr.	34.8 gr.	36.4 gr.	
IMR 4350	33.8 gr.	35.2 gr.	36.7 gr.	38.2 gr.	39.6 gr.	41.1 gr.
H4831	37.0 gr.	38.4 gr.	39.7 gr.	41.0 gr.	42.4 gr.	43.7 gr.

See Ballistics Tables on pages 71-74, Vol. II

 Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP

Ballistic Coefficient — .465
C.O.L. — 2.950"

**#2633 BTHP MATCH**

Ballistic Coefficient — .484
C.O.L. — 2.950"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	27.5 gr.	29.1 gr.	30.6 gr.	32.2 gr.	33.8 gr.	
IMR 4064	29.5 gr.	30.9 gr.	32.3 gr.	33.7 gr.	35.1 gr.	
H4895	29.6 gr.	31.0 gr.	32.4 gr.	33.8 gr.		
IMR 4320	29.3 gr.	30.9 gr.	32.5 gr.	34.1 gr.	35.7 gr.	
H380	30.9 gr.	32.3 gr.	33.7 gr.	35.1 gr.		
IMR 4350	33.9 gr.	35.4 gr.	36.8 gr.	38.2 gr.	39.7 gr.	41.1 gr.
H4831	36.6 gr.	38.0 gr.	39.4 gr.	40.8 gr.	42.4 gr.	43.9 gr.

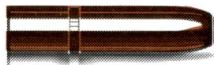
See Ballistics Tables on pages 74-76, 76-78, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN

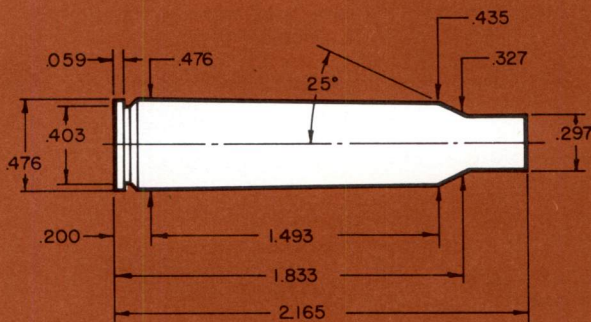
Ballistic Coefficient — .283
C.O.L. — 2.970"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	25.3 gr.	26.8 gr.	28.4 gr.	30.0 gr.		
IMR 4064	26.9 gr.	28.5 gr.	30.0 gr.	31.5 gr.	33.0 gr.	
H4895	27.0 gr.	28.6 gr.	30.1 gr.	31.6 gr.		
IMR 4320	27.4 gr.	28.9 gr.	30.5 gr.	32.0 gr.	33.6 gr.	
H380	28.5 gr.	30.1 gr.	31.6 gr.	33.2 gr.		
IMR 4350	30.6 gr.	32.3 gr.	34.0 gr.	35.6 gr.	37.3 gr.	39.0 gr.
H4831	32.8 gr.	34.3 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.4 gr.

See Ballistics Tables on pages 79-80, Vol. II

 Indicates maximum load • use with caution



6.5 x 55mm SWEDISH MAUSER

RIFLE: MAUSER MODEL 1896
BARREL: 29", 1 in 7½ TWIST
CASE: NORMA
PRIMER: REMINGTON 9½

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 3.035"
MAX. CASE LENGTH: 2.165"
CASE TRIM LENGTH: 2.155"

The 6.5 x 55 is an excellent and deservedly popular military surplus import. Adopted as the Swedish service cartridge in 1894 and chambered in three different Mauser rifle models, the cartridge is today widely popular in Sweden and Norway (where it was used in Krag-Jorgenson rifles) and it continues to gain boosters in this country.

The 6.5 x 55 differs from the rest of the Mauserwerke's smokeless powder military cartridges in not sharing the same basic case; its head diameter is .015" larger and its rim somewhat thicker. Excellent cases are available and the careful reloader will use these rather than attempting to form cases from other calibers.

Loaded with Hornady 129 grain and 140 grain bullets, the 6.5 x 55 is acceptable for all but the largest North American game. The 160 grain round nose bullet, while sacrificing some performance due to its shape, nevertheless has extremely good sectional density and offers excellent performance on North American game when range is not critical. Reloaders are cautioned, however, against attempting really high intensity loads in either the Mauser or Krag actions, for these were not designed for pressures commonly developed in current factory rifles. The loads listed were safe in our test rifles, but maximum loads should be developed with care by each individual handloader. Start several grains below the top loads listed and work up a grain at a time, watching for signs of excessive pressure such as case head expansion.

The Model 1896 rifles with 29" barrels and Model 38 rifles with 24" barrels will both produce velocities up to 200 fps faster than the 18" carbine used in our previous tests.

As with all surplus military firearms, they should be inspected by a knowledgeable gunsmith before firing them. However most Swedish Mausers seem to be in quite good shape.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP

Ballistic Coefficient — .358

C.O.L. — 2.975"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	31.9 gr.	33.6 gr.	35.3 gr.	37.0 gr.		
H4895	32.9 gr.	34.6 gr.	36.3 gr.			
AA 2520	33.1 gr.	34.7 gr.	36.3 gr.	37.9 gr.		
RL-15			37.1 gr.	38.5 gr.	39.9 gr.	41.3 gr.
IMR 4064	34.5 gr.	35.9 gr.	37.3 gr.	38.7 gr.	40.1 gr.	
H380		38.7 gr.	40.4 gr.	42.1 gr.	43.8 gr.	
WIN 760			42.0 gr.	43.7 gr.	45.4 gr.	47.1 gr.
IMR 4350		42.7 gr.	44.5 gr.	46.3 gr.		
H450			44.6 gr.	46.8 gr.	49.0 gr.	51.3 gr.
H4831			45.1 gr.	47.1 gr.	49.0 gr.	50.9 gr.

See Ballistics Tables on pages 69-71, Vol. II

6.5 X 55mm SWEDISH MAUSER

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP
Ballistic Coefficient — .445
C.O.L. — 3.035"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	31.7 gr.	33.6 gr.	35.5 gr.	37.4 gr.	
H4895	32.0 gr.	33.8 gr.	35.7 gr.	37.5 gr.	
RL-15	32.4 gr.	34.3 gr.	36.3 gr.	38.3 gr.	40.3 gr.
IMR 4064	34.3 gr.	36.0 gr.	37.6 gr.	39.3 gr.	
H380		37.4 gr.	39.5 gr.	41.5 gr.	43.5 gr.
IMR 4350	39.4 gr.	41.5 gr.	42.9 gr.	44.4 gr.	46.0 gr.
H4350		41.2 gr.	42.9 gr.	44.6 gr.	46.3 gr.
AA 3100		41.3 gr.	43.4 gr.	45.4 gr.	
H450		42.6 gr.	44.2 gr.	45.9 gr.	47.5 gr.
H4831		42.9 gr.	44.4 gr.	46.0 gr.	47.5 gr.

See Ballistics Tables on pages 71-74, 227-228, 252-254, Vol. II



Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP
Ballistic Coefficient — .465
C.O.L. — 2.945"



#2633 BTHP MATCH
Ballistic Coefficient — .484
C.O.L. — 3.025"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	30.9 gr.	32.6 gr.	34.3 gr.	36.0 gr.	
H4895	31.8 gr.	33.6 gr.	35.4 gr.	37.2 gr.	
RL-15		34.7 gr.	36.4 gr.	38.0 gr.	
H380		34.9 gr.	37.1 gr.	39.3 gr.	41.5 gr.
IMR 4064	33.5 gr.	35.1 gr.	36.7 gr.	38.3 gr.	
IMR 4350	36.8 gr.	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.
H450	39.0 gr.	40.5 gr.	42.0 gr.	43.5 gr.	45.0 gr.
H4831	39.1 gr.	40.7 gr.	42.4 gr.	44.1 gr.	45.7 gr.
AA 3100	39.3 gr.	41.2 gr.	43.1 gr.	45.0 gr.	

See Ballistics Tables on pages 74-76, 76-78, 229-230, 230-232, 254-255, 256-257, Vol. II

Indicates maximum load • use with caution

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

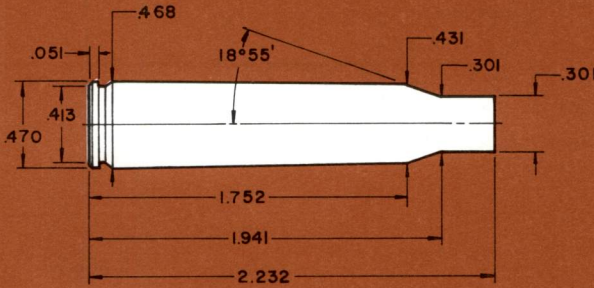
#2640 RN
Ballistic Coefficient — .283
C.O.L. — 3.035"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	30.2 gr.	32.1 gr.	34.0 gr.		
H4895	31.9 gr.	33.4 gr.	36.0 gr.		
IMR 4064	33.4 gr.	35.1 gr.			
IMR 4350	34.9 gr.	36.7 gr.	38.4 gr.	40.2 gr.	42.0 gr.
H4831	36.8 gr.	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.
H450		38.8 gr.	40.5 gr.	42.2 gr.	43.9 gr.
RL-19	37.4 gr.	39.2 gr.	41.0 gr.	42.8 gr.	
AA 3100	38.2 gr.	40.5 gr.	42.8 gr.		

See Ballistics Tables on pages 79-80, Vol. II

 Indicates maximum load • use with caution



6.5 X 57mm

RIFLE: MAUSER 66
BARREL: 23⁵/₈", 1 in 8" TWIST
CASE: RWS
PRIMER: FEDERAL 210

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 3.075"
MAX. CASE LENGTH: 2.232"
CASE TRIM LENGTH: 2.222"

The 6.5 x 57mm is based on the 7 x 57mm Mauser case necked down, with a slightly different shoulder angle and nearly identical length. It originated somewhere around 1895 and is quite popular in Europe. The 6.5 x 57mm is of adequate size to easily handle deer sized game and can be used effectively on elk and black bear.

The 6.5mm bullets offered by Hornady are very deadly and dependable. Their extremely high ballistic coefficients make them most desirable for long range work. Hornady offers four different bullet weights for the 6.5mm: the 100 grain Spire Point for varminting, the 129 grain Spire Point, 140 grain Spire Point, 160 grain Round Nose for big game, and the 140 grain BTHP Match for target shooting.

A rimmed version of this cartridge is used extensively in combination guns such as the Sauer, and maximum loads here should be dropped by 10 to 15%, since our data was obtained through the use of the much stronger Mauser Model 66 bolt action rifle.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP

Ballistic Coefficient — .358

C.O.L. — 3.015"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	39.4 gr.	40.6 gr.	41.7 gr.	42.8 gr.	
IMR 4350	42.8 gr.	44.0 gr.	45.1 gr.	46.3 gr.	47.5 gr.
IMR 4831	45.9 gr.	47.0 gr.	48.0 gr.	49.1 gr.	

See Ballistics Tables on pages 69-70, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP

Ballistic Coefficient — .445

C.O.L. — 3.005"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4064	36.0 gr.	37.4 gr.	38.9 gr.	40.4 gr.	
IMR 4350	39.3 gr.	40.6 gr.	41.9 gr.	43.2 gr.	44.5 gr.
IMR 4831	42.4 gr.	43.7 gr.	45.0 gr.	46.3 gr.	47.7 gr.

See Ballistics Tables on pages 71-74, 227-228, 252-254, Vol. II

 Indicates maximum load • use with caution

6.5 X 57mm

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP
Ballistic Coefficient — .465
C.O.L. — 3.030"



#2633 BTHP MATCH
Ballistic Coefficient — .484
C.O.L. — 3.030"



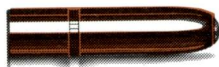
POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	35.2 gr.	36.7 gr.	38.2 gr.	39.7 gr.	
IMR 4350	38.3 gr.	39.7 gr.	41.1 gr.	42.4 gr.	43.8 gr.
IMR 4831	41.0 gr.	42.2 gr.	43.5 gr.	44.7 gr.	

See Ballistics Tables on pages 74-76, 76-78, 229-230, 230-232, 254-255, 256-257, Vol. II

160 GRAIN BULLETS:

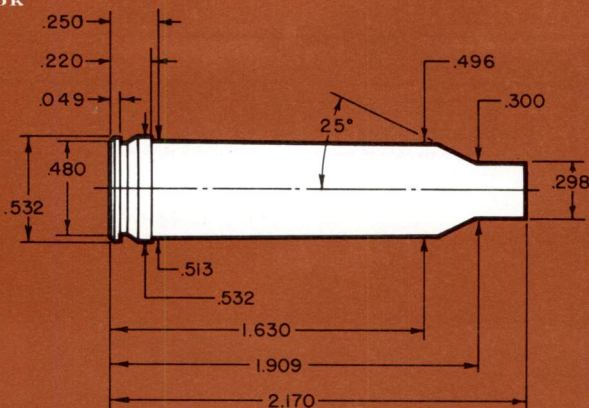
SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN
Ballistic Coefficient — .283
C.O.L. — 3.075"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4064	32.9 gr.	34.6 gr.	36.4 gr.	38.1 gr.	
IMR 4350	36.0 gr.	37.5 gr.	39.0 gr.	40.5 gr.	41.9 gr.
IMR 4831	39.4 gr.	40.7 gr.	42.0 gr.	43.3 gr.	44.6 gr.

See Ballistics Tables on pages 79-80, Vol. II



6.5mm REMINGTON MAGNUM

RIFLE: F.N. MAUSER CUSTOM
BARREL: 24", 1 in 9" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 9½

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 3.040"
MAX. CASE LENGTH: 2.170"
CASE TRIM LENGTH: 2.160"

This belted cartridge, introduced in 1966 in Remington's Model 600 carbine, has considerably more powder capacity than the smaller European 6.5's. Developed by necking down the 350 Remington Magnum to 6.5mm, it is loaded by the factory with a 120 grain bullet and basically sold for game hunting, though reloaders can readily adapt it for varminting with 100 grain Hornady Spire Point loads (the 129 grain Spire Point is quite suitable for varmint shooting also, and is proving an excellent dual purpose bullet in the 6.5mm magnums).

The 18½" barrel of the Model 600 in which this cartridge was originally chambered did not fully exploit its performance potential. Remington did chamber its 6.5mm magnum in the Model 700 BDL, a rifle whose 24" barrel will develop considerably more velocity than possible with the carbine version. The initial appeal this cartridge enjoyed seems since to have waned.

Heavy bullets must be seated quite deeply in the short-necked 6.5mm Remington Magnum case, thereby reducing case capacity and velocity potential. Despite this, Remington's 6.5mm is adequate for all but the largest North American game when loaded from the wide selection of Hornady 6.5mm bullets.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP
Ballistic Coefficient — .358
C.O.L. — 2.940"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	36.8 gr.	38.7 gr.	40.5 gr.	42.4 gr.	
IMR 4064	38.6 gr.	40.5 gr.	42.4 gr.	44.3 gr.	
H4895	39.1 gr.	41.0 gr.	42.9 gr.	44.7 gr.	
IMR 4320	39.9 gr.	41.9 gr.	43.8 gr.	45.7 gr.	47.6 gr.
H380	42.5 gr.	44.6 gr.	46.8 gr.	49.0 gr.	
IMR 4350	45.2 gr.	47.0 gr.	48.7 gr.	50.5 gr.	52.2 gr.
H4831	50.0 gr.	51.6 gr.	53.3 gr.	55.0 gr.	56.6 gr.

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP
Ballistic Coefficient — .445
C.O.L. — 3.040"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	37.3 gr.	39.3 gr.	41.2 gr.	43.2 gr.	
IMR 4064	38.2 gr.	40.2 gr.	42.1 gr.	44.1 gr.	
H4895	38.4 gr.	40.4 gr.	42.4 gr.	44.4 gr.	46.4 gr.
IMR 4320	39.5 gr.	41.4 gr.	43.3 gr.	45.2 gr.	47.1 gr.
IMR 4350		43.6 gr.	45.7 gr.	47.7 gr.	49.8 gr.
H380	41.9 gr.	44.0 gr.	46.1 gr.	48.3 gr.	
H4831		48.3 gr.	50.3 gr.	52.3 gr.	54.2 gr.

See Ballistics Tables on pages 71-74, 227-228, 252-254, Vol. II

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP

Ballistic Coefficient — .465
C.O.L. — 3.020"



#2633 BTHP MATCH

Ballistic Coefficient — .484
C.O.L. — 3.020"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	37.5 gr.	39.7 gr.	41.9 gr.	44.1 gr.		
H4895	39.1 gr.	41.2 gr.	43.4 gr.	45.5 gr.	47.7 gr.	
IMR 4064	38.7 gr.	41.0 gr.	43.4 gr.	45.7 gr.	48.0 gr.	
IMR 4320	39.9 gr.	42.1 gr.	44.3 gr.	46.4 gr.		
IMR 4350			45.7 gr.	48.2 gr.	50.6 gr.	53.1 gr.
H380	41.6 gr.	44.0 gr.	46.3 gr.	48.6 gr.	50.9 gr.	
H4831		47.4 gr.	49.7 gr.	52.0 gr.	54.3 gr.	

See Ballistics Tables on pages 74-76, 76-78, 229-230, 230-232, 254-255, 256-257, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN

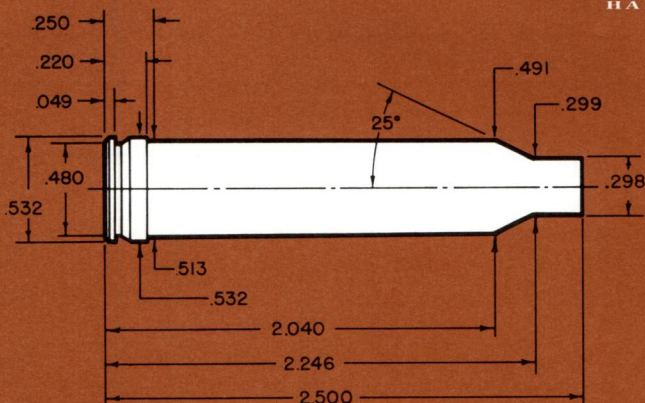
Ballistic Coefficient — .283
C.O.L. — 3.040"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	36.0 gr.	38.3 gr.	40.4 gr.	42.6 gr.		
IMR 4064	36.9 gr.	39.2 gr.	41.6 gr.	43.9 gr.		
H4895	37.6 gr.	39.7 gr.	41.8 gr.	43.9 gr.	46.0 gr.	
IMR 4320	38.0 gr.	40.1 gr.	42.3 gr.	44.5 gr.	46.7 gr.	
H380	39.7 gr.	42.0 gr.	44.3 gr.	46.7 gr.		
IMR 4350	40.2 gr.	42.5 gr.	44.7 gr.	46.9 gr.	49.1 gr.	51.4 gr.
H4831	43.8 gr.	45.9 gr.	48.1 gr.	50.2 gr.	52.4 gr.	54.5 gr.

See Ballistics Tables on pages 79-80, Vol. II

 Indicates maximum load • use with caution



264 WINCHESTER MAGNUM

RIFLE: WINCHESTER MODEL 70
BARREL: 24", 1 in 8" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 3.350"
MAX. CASE LENGTH: 2.500"
CASE TRIM LENGTH: 2.490"

The hot, powerful 264 Winchester Magnum is one of a series of belted magnums the firm began with its 458 Winchester. Introduced in 1958 and billed then as the ultimate in high velocity, flat trajectory hunting cartridges, it has become fairly popular for plains and mountain hunting. In use on varmints, the 264 can turn in spectacular results when it drives a 100 grain Hornady Spire Point up to 3600 fps. Loaded with the long 160 grain Hornady Round Nose or the 140 grain Hornady Spire Point, the 264 Winchester Magnum has performed well on the largest North American game. If long range target shooting is desired, the 140 grain BTHP match is an excellent choice, while the 129 grain Spire Point should drop an antelope or deer in its tracks.

There are no free lunches, however, and many 264 owners have quickly discovered that the price of ultra high velocity is reduced barrel life. As a matter of fact, we burned out several barrels in developing the loading tables which follow. The game hunter who shoots only a few dozen rounds a year with his 264 will have no special problems, but an avid shooter might. Anytime a large capacity case with a small bore is fired quickly, barrel wear can be a problem. Spacing shots so the barrel can cool and using moderate loads whenever possible will help prolong the 264's barrel life. One of the reasons the 7mm Remington Magnum so thoroughly eclipsed the popularity of the 264 may well be that the 7mm is somewhat easier on barrels.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP**Ballistic Coefficient — .358****C.O.L. — 3.230"**

POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	49.9 gr.	52.1 gr.	54.3 gr.	56.5 gr.	
H4895	50.0 gr.	52.3 gr.	54.6 gr.	56.9 gr.	
IMR 4320		53.0 gr.	55.3 gr.	57.6 gr.	59.9 gr.
H380		54.8 gr.	56.8 gr.	58.7 gr.	
IMR 4350	54.8 gr.	57.3 gr.	59.8 gr.	62.3 gr.	
IMR 4831	59.1 gr.	61.1 gr.	63.2 gr.	65.3 gr.	
H450		61.6 gr.	64.6 gr.	67.5 gr.	70.4 gr.

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP**Ballistic Coefficient — .358****C.O.L. — 3.290"**

POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	49.8 gr.	52.3 gr.	54.8 gr.	57.3 gr.	
H4895	50.0 gr.	52.4 gr.	54.7 gr.	57.1 gr.	
IMR 4320	51.6 gr.	53.8 gr.	56.1 gr.	58.3 gr.	
IMR 4350	51.8 gr.	54.6 gr.	57.3 gr.		
H380	55.0 gr.	56.6 gr.	58.2 gr.	59.8 gr.	
IMR 4831	55.0 gr.	57.4 gr.	59.7 gr.	62.0 gr.	
H450			64.1 gr.	66.3 gr.	68.4 gr.

See Ballistics Tables on pages 71-74, 227-228, 252-254, Vol. II

 Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP

Ballistic Coefficient — .465
C.O.L. — 3.255"



#2633 BTHP Match

Ballistic Coefficient — .484
C.O.L. — 3.255"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	49.0 gr.	51.4 gr.	53.7 gr.		
H4895	49.5 gr.	51.8 gr.	54.2 gr.		
IMR 4320	49.8 gr.	52.3 gr.	54.8 gr.		
IMR 4350	51.1 gr.	53.6 gr.	56.1 gr.		
IMR 4831	53.1 gr.	55.7 gr.	58.4 gr.	61.4 gr.	
H450		58.9 gr.	61.7 gr.	64.4 gr.	67.2 gr.
H870		73.2 gr.	75.7 gr.	78.3 gr.	

See Ballistics Tables on pages 74-76, 76-78, 229-230, 230-232, 254-255, 256-257, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .328
DIAMETER: .264"

#2640 RN

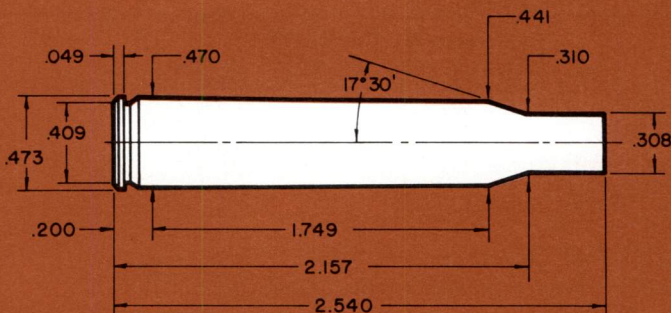
Ballistic Coefficient — .283
C.O.L. — 3.350"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	45.4 gr.	47.8 gr.	50.2 gr.		
IMR 4895	45.7 gr.	48.2 gr.	50.6 gr.	53.0 gr.	
IMR 4320	46.6 gr.	48.9 gr.	51.2 gr.	53.6 gr.	
IMR 4350	46.2 gr.	49.6 gr.	53.0 gr.		
IMR 4831	47.7 gr.	51.1 gr.	54.5 gr.		
H450		58.3 gr.	60.0 gr.	61.8 gr.	63.5 gr.
H870		66.5 gr.	68.6 gr.	70.7 gr.	72.8 gr.

See Ballistics Tables on pages 79-80, Vol. II

 Indicates maximum load • use with caution



270 WINCHESTER

RIFLE: WINCHESTER 70
BARREL: 24", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .277"
MAXIMUM C.O.L.: 3.340"
MAX. CASE LENGTH: 2.540"
CASE TRIM LENGTH: 2.530"

This popular necked down 30-06 cartridge was introduced in 1925 by Winchester for their Model 54 bolt action. Its renown as a flat shooting big game stopper has kept the 270 alive and well for more than 65 years. Much of the popularity of the 270 can be credited to the late Jack O'Connor who wrote more articles on the 270 caliber than any other person. The 270 has long held a position as one of the most popular big game cartridges in North America. In recent years, the 7mm's have gained a large following, but they have not slowed the sales of the venerable 270.

The flat shooting, high velocity 130 and 150 grain Spire Points along with our 140 grain Boat Tail Spire Point make this cartridge effective on all North American game and many of the thin skinned animals of Africa. Our InterLock design improves this already outstanding performer. The InterLock design coupled with the Inner Groove feature gives controlled expansion and prevents core slippage.

The 270 can double as a varmint round. Hornady makes a 100 grain Spire Point and a 110 grain Hollow Point for long range varminting.

The powder that showed the best uniformity and yielded the best accuracy was IMR 4831. The 270 is an efficient cartridge, and for this reason most powders listed performed quite well.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .186
DIAMETER: .277"

#2710 SP**Ballistic Coefficient — .307****C.O.L. — 3.075"**

POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4320		44.4 gr.	47.0 gr.	49.7 gr.	52.3 gr.
IMR 4064	48.2 gr.	49.6 gr.	51.0 gr.	52.4 gr.	53.8 gr.
WIN 760	51.1 gr.	52.9 gr.	54.6 gr.	56.4 gr.	
IMR 4350	54.2 gr.	55.6 gr.	56.9 gr.	58.3 gr.	59.6 gr.
H4350	53.6 gr.	55.5 gr.	57.4 gr.	59.3 gr.	
IMR 4831	57.2 gr.	58.6 gr.	60.0 gr.		
H450	58.1 gr.	59.8 gr.	61.6 gr.	63.3 gr.	65.1 gr.
H4831	57.9 gr.	59.8 gr.	61.7 gr.		

See Ballistics Tables on pages 80-83, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .277"

#2720 HP**Ballistic Coefficient — .352****C.O.L. — 3.305"**

POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4320		43.6 gr.	46.2 gr.	48.8 gr.	
IMR 4064	47.2 gr.	48.7 gr.	50.1 gr.	51.6 gr.	
WIN 760	49.9 gr.	51.7 gr.	53.4 gr.	55.2 gr.	
IMR 4350	53.0 gr.	54.4 gr.	55.7 gr.	57.1 gr.	58.4 gr.
H4350	53.1 gr.	54.8 gr.	56.4 gr.	58.1 gr.	59.7 gr.
IMR 4831	55.8 gr.	57.3 gr.	58.8 gr.	60.3 gr.	
H450	56.6 gr.	58.4 gr.	60.2 gr.	62.0 gr.	
H4831	56.8 gr.	58.6 gr.	60.4 gr.		

See Ballistics Tables on pages 83-86, Vol. II

 Indicates maximum load • use with caution

130 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .277"

#2730 SP
Ballistic Coefficient — .409
C.O.L. — 3.200"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	45.1 gr.	46.7 gr.	48.3 gr.	49.8 gr.	
WIN 760	47.1 gr.	49.1 gr.	51.1 gr.	53.2 gr.	
IMR 4350	50.6 gr.	52.0 gr.	53.4 gr.	54.8 gr.	
H4350	50.7 gr.	52.6 gr.	54.4 gr.	56.3 gr.	
IMR 4831	53.0 gr.	54.4 gr.	55.8 gr.	57.2 gr.	
H4831	53.6 gr.	55.6 gr.	57.6 gr.	59.6 gr.	
H450	52.6 gr.	54.9 gr.	57.2 gr.	59.4 gr.	61.7 gr.
IMR 7828	55.1 gr.	56.7 gr.	58.2 gr.		

See Ballistics Tables on pages 86-89, 232-233, 257-258, Vol. II

140 GRAIN BULLETS:

SECTIONAL DENSITY: .261
DIAMETER: .277"

#2735 BTSP
Ballistic Coefficient — .486
C.O.L. — 3.200"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	41.8 gr.	43.9 gr.	45.9 gr.	47.9 gr.	
WIN 760	46.5 gr.	48.4 gr.	50.3 gr.		
IMR 4350	48.9 gr.	50.3 gr.	51.7 gr.	53.2 gr.	
H4350	49.2 gr.	51.1 gr.	52.9 gr.	54.7 gr.	
IMR 4831	51.1 gr.	52.6 gr.	54.1 gr.	55.7 gr.	
H450	51.9 gr.	53.7 gr.	55.5 gr.	57.3 gr.	59.1 gr.
H4831	51.6 gr.	53.6 gr.	55.6 gr.	57.5 gr.	
IMR 7828	52.3 gr.	54.3 gr.	56.4 gr.	58.5 gr.	

See Ballistics Tables on pages 90-92, 233-234, 258-259, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .279
DIAMETER: .277"

#2740 SP

Ballistic Coefficient — .462
C.O.L. — 3.200"



#2745 RN

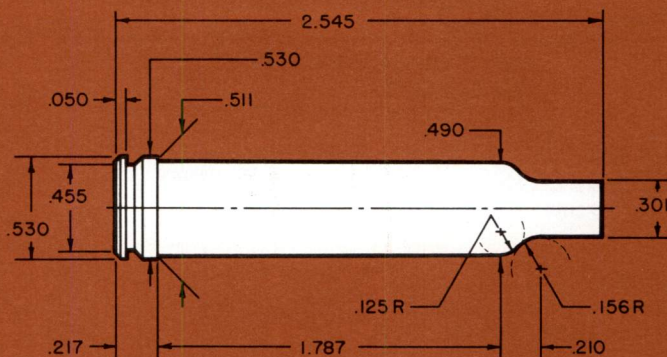
Ballistic Coefficient — .269
C.O.L. — 3.153"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	42.5 gr.	44.4 gr.	46.4 gr.		
WIN 760	45.9 gr.	47.9 gr.	49.8 gr.		
IMR 4350	47.3 gr.	49.0 gr.	50.7 gr.	52.4 gr.	
H4350	47.7 gr.	49.7 gr.	51.7 gr.	53.8 gr.	
IMR 4831	49.8 gr.	51.3 gr.	52.9 gr.	54.5 gr.	
H4831	50.1 gr.	52.2 gr.	54.3 gr.	56.4 gr.	
H450	50.2 gr.	52.3 gr.	54.5 gr.	56.6 gr.	
IMR 7828	51.2 gr.	52.9 gr.	54.6 gr.	56.3 gr.	

See Ballistics Tables on pages 93, 94, 234, 259-260, Vol. II

Indicates maximum load • use with caution



270 WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 24", 1 in 12" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .277"
MAXIMUM C.O.L.: 3.280"
MAX. CASE LENGTH: 2.545"
CASE TRIM LENGTH: 2.535"

The 270 Weatherby Magnum is at home anywhere on the North American continent. Its high velocity and flat trajectory also provides long range stopping power on thin skinned African plains animals.

This particular cartridge was actually the first case that Roy Weatherby derived from the necked down 300 H & H case; it incorporates the Weatherby double radius shoulder. The 270 Weatherby Magnum is commercially available only in the Mark V Weatherby, USRAC's Model 70 and Ruger's Number 1.

By using the explosive Hornady 100 grain Spire Points or 110 grain Hollow Points, the 270 Weatherby Magnum can be used very effectively on varmints, but it is at its best with the heavier bullets.

During our testing all powders gave acceptable results, with Reloder 22 providing the highest velocity. Most large cartridges do not perform well with reduced loads and this cartridge is no exception. For best performance all loads should be kept near maximum. Be sure to work up to maximum loads with caution as any variations in components can alter pressures to dangerous levels.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .186
DIAMETER: .277"

#2710 SP

Ballistic Coefficient — .307
C.O.L. — 3.220"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
RL-15		54.0 gr.	55.8 gr.	57.6 gr.	59.5 gr.	61.3 gr.
IMR 4064		53.0 gr.	55.8 gr.	58.5 gr.	61.2 gr.	
IMR 4350	63.5 gr.	65.3 gr.	67.1 gr.	69.0 gr.	70.8 gr.	
IMR 4831	61.6 gr.	64.0 gr.	66.4 gr.	68.9 gr.	71.3 gr.	
H4350	63.7 gr.	65.6 gr.	67.4 gr.	69.2 gr.	71.0 gr.	
AA 3100	65.1 gr.	66.9 gr.	68.8 gr.	70.6 gr.	72.5 gr.	74.3 gr.
H4831	66.6 gr.	68.6 gr.	70.6 gr.	72.6 gr.	74.6 gr.	76.6 gr.

See Ballistics Tables on pages 80-83, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .277"

#2720 HP

Ballistic Coefficient — .352
C.O.L. — 3.290"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
RL-15	51.9 gr.	54.2 gr.	56.5 gr.	58.8 gr.	61.1 gr.	
IMR 4064	51.9 gr.	54.3 gr.	56.7 gr.	59.1 gr.		
IMR 4350	62.3 gr.	64.5 gr.	66.7 gr.	68.8 gr.		
IMR 4831	61.8 gr.	64.4 gr.	66.9 gr.	69.4 gr.		
AA 3100	65.4 gr.	67.2 gr.	69.0 gr.	70.8 gr.	72.6 gr.	74.4 gr.
H4350	64.8 gr.	66.9 gr.	69.0 gr.			
H4831	67.2 gr.	68.9 gr.	70.6 gr.	72.3 gr.	74.0 gr.	

See Ballistics Tables on pages 83-86, Vol. II

Indicates maximum load • use with caution

130 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .277"

#2730 SP
Ballistic Coefficient — .409
C.O.L. — 3.280"



POWDER	VELOCITY						
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	50.9 gr.	53.0 gr.	55.2 gr.	57.3 gr.			
IMR 4831		61.0 gr.	63.4 gr.	65.9 gr.	68.4 gr.		
IMR 4350	59.2 gr.	61.8 gr.	64.3 gr.	66.9 gr.			
H4350	61.2 gr.	63.3 gr.	65.4 gr.				
RL-22		63.8 gr.	66.0 gr.	68.1 gr.	70.2 gr.	72.3 gr.	74.4 gr.
H4831	64.3 gr.	66.1 gr.	67.9 gr.	69.8 gr.	71.6 gr.	73.5 gr.	
IMR 7828	66.7 gr.	68.6 gr.	70.4 gr.	72.3 gr.	74.2 gr.	76.0 gr.	

See Ballistics Tables on pages 86-89, 232-233, 257-258, Vol. II

140 GRAIN BULLETS:

SECTIONAL DENSITY: .261
DIAMETER: .277"

#2735 BTSP
Ballistic Coefficient — .486
C.O.L. — 3.280"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	51.5 gr.	54.1 gr.	56.6 gr.			
IMR 4350	59.7 gr.	62.0 gr.	64.4 gr.			
IMR 4831	59.2 gr.	61.8 gr.	64.4 gr.	67.0 gr.		
H4350	61.6 gr.	63.5 gr.	65.5 gr.			
RL-22		65.2 gr.	67.1 gr.	69.0 gr.	70.9 gr.	72.9 gr.
H4831	64.3 gr.	67.1 gr.	68.9 gr.	70.8 gr.	72.6 gr.	
IMR 7828	66.8 gr.	68.7 gr.	70.5 gr.	72.4 gr.	74.3 gr.	76.1 gr.

See Ballistics Tables on pages 90-92, 233-234, 258-259, Vol. II

Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY:	.279
DIAMETER:	.277"

#2740 SP
Ballistic Coefficient — .462
C.O.L. — 3.280"

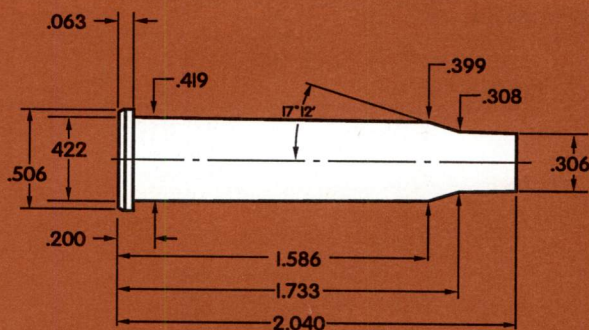


#2745 RN
Ballistic Coefficient — .269
C.O.L. — 3.148"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	51.0 gr.	53.4 gr.	55.9 gr.			
IMR 4831		60.3 gr.	62.8 gr.	65.2 gr.	67.7 gr.	
IMR 4350	58.8 gr.	61.2 gr.	63.5 gr.	65.9 gr.		
H4350	60.1 gr.	62.2 gr.	64.3 gr.	66.4 gr.		
H450	59.5 gr.	62.1 gr.	64.7 gr.			
RL-22		63.3 gr.	65.5 gr.	67.7 gr.	70.0 gr.	72.2 gr.
H4831	62.2 gr.	64.3 gr.	66.4 gr.	68.5 gr.	70.6 gr.	
IMR 7828	65.0 gr.	67.0 gr.	69.1 gr.	71.2 gr.	73.3 gr.	

See Ballistics Tables on pages 93, 94, 234, 259-260, Vol. II



7-30 WATERS

RIFLE: USRAC M94AE
BARREL: 24", 1 in 9½" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.550"
MAX. CASE LENGTH: 2.040"
CASE TRIM LENGTH: 2.030"

Ken Waters, well known firearm guru, felt the need for a new hunting cartridge of better ballistics than the .30-30 Winchester yet using the .30-30 case and the tubular magazines and actions of the .30-30 Winchester. The final design of this new cartridge was a .30-30 case necked down to 7mm (.284") and "blown out," giving more powder capacity than the parent case. In 1984 the first rifles and cartridges were manufactured. Waters had originally wanted a 139-140 grain bullet, but Federal chose to load a 120 grain bullet at higher velocity. The Hornady bullet perhaps answers Mr. Waters original quest for a suitable and heavier bullet. The original firearm was the U.S. Repeating Arms, Model 94 Angle Eject with a 24" barrel. Thompson-Center has also produced firearms for the 7-30 Waters. The data here was developed in the M94 and was acceptable pressure wise and very acceptable accuracy wise. Groups of 1½" - 2" were obtainable as were velocities of 2600 fps. Reports from the field indicate it fulfills its originator's intentions.

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2822 FP
Ballistic Coefficient — .196
C.O.L. — 2.525"

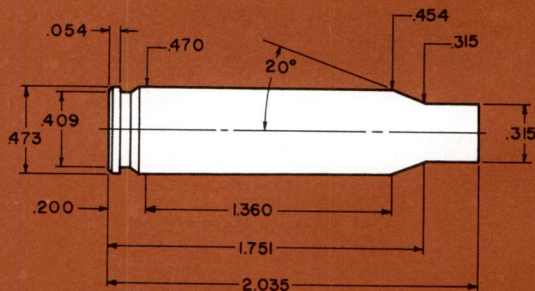


POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
H322	26.8 gr.	28.4 gr.	30.0 gr.	31.6 gr.	
H4895	27.1 gr.	28.6 gr.	30.2 gr.	31.8 gr.	
H335	28.3 gr.	29.7 gr.	31.2 gr.	32.6 gr.	34.1 gr.
IMR 4064	27.5 gr.	29.3 gr.	31.2 gr.	33.0 gr.	34.8 gr.
AA 2460	28.6 gr.	30.2 gr.	31.9 gr.	33.5 gr.	35.2 gr.
WIN 748	30.4 gr.	31.8 gr.	33.2 gr.	34.6 gr.	36.0 gr.

See Ballistics Tables on pages 104-107, Vol. II

7-30 WATERS

 Indicates maximum load • use with caution



7mm-08 REMINGTON

RIFLE: REMINGTON MODEL 788
BARREL: 18½", 1 in 9¼" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 9½

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.850"
MAX. CASE LENGTH: 2.035"
CASE TRIM LENGTH: 2.025"

The 7mm-08 was introduced by Remington in 1980 in their Model 788 and 700 BDL rifles. This cartridge case is based on the 308 case with a case length of 2.035" while retaining the same body and shoulder angle of its parent case. Although different in size, the 7mm-08 essentially duplicates the much older 7 x 57 Mauser. Since it is shorter, firearms such as the Browning BLR can be and are chambered for this fine cartridge.

The largest following for the 7mm-08 has come from the metallic silhouette shooters. This cartridge, when loaded with the flat shooting and highly accurate Hornady 162 gr. BTHP, is very effective on the distant silhouette targets.

Our test rifle gave best results throughout the range of bullets with Winchester 748, IMR 4064, and IMR 4320 powders. Our data was obtained from a Model 788 with an 18½" barrel; however, 150 to 200 fps more velocity can be expected from the longer barrels of the 700 BDL models.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP

Ballistic Coefficient — .279
C.O.L. — 2.700"



POWDER	VELOCITY			
	2700 fps	2800 fps	2900 fps	3000 fps
H335		34.8 gr.	37.7 gr.	40.7 gr.
H322	35.1 gr.	36.7 gr.	38.3 gr.	
AA 2460	35.7 gr.	37.7 gr.	39.8 gr.	41.8 gr.
IMR 4320	36.7 gr.	38.6 gr.	40.4 gr.	42.3 gr.
IMR 4064	39.4 gr.	41.3 gr.	42.7 gr.	44.3 gr.
WIN 748	39.6 gr.	41.6 gr.	43.7 gr.	45.8 gr.

See Ballistics Tables on pages 95-97, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 2.730"

**#2815 HP**

Ballistic Coefficient — .334
C.O.L. — 2.730"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4320	36.0 gr.	37.3 gr.	38.6 gr.	39.9 gr.	41.1 gr.	42.4 gr.
IMR 4064	37.4 gr.	38.6 gr.	39.8 gr.	41.1 gr.	42.2 gr.	43.4 gr.
WIN 748	37.7 gr.	39.0 gr.	40.4 gr.	41.7 gr.	43.1 gr.	
WIN 760	41.0 gr.	42.4 gr.	43.8 gr.	45.2 gr.	46.6 gr.	

See Ballistics Tables on pages 97-99, 100-102, Vol. II

 Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 2.830"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 2.830"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4320	34.7 gr.	36.2 gr.	37.6 gr.	39.1 gr.	40.6 gr.
IMR 4064	36.1 gr.	37.3 gr.	38.5 gr.	39.7 gr.	40.8 gr.
WIN 748	34.8 gr.	36.6 gr.	38.3 gr.	40.1 gr.	
WIN 760	39.6 gr.	41.0 gr.	42.5 gr.	44.0 gr.	

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP
Ballistic Coefficient — .433
C.O.L. — 2.728"



#2835 RN
Ballistic Coefficient — .279
C.O.L. — 2.723"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4320	33.8 gr.	35.1 gr.	36.5 gr.	37.9 gr.	39.2 gr.
IMR 4064	34.0 gr.	35.4 gr.	36.9 gr.	38.3 gr.	39.7 gr.
WIN 748	35.0 gr.	36.4 gr.	37.7 gr.	39.0 gr.	
WIN 760	37.6 gr.	39.2 gr.	40.8 gr.	42.4 gr.	
IMR 4350	38.2 gr.	39.8 gr.	41.4 gr.	43.0 gr.	

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

 Indicates maximum load • use with caution

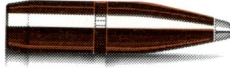
162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP Match
Ballistic Coefficient — .534
C.O.L. — 2.850"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 2.850"



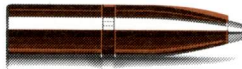
POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 4064	32.8 gr.	34.0 gr.	35.2 gr.	36.5 gr.	37.7 gr.
IMR 4320	32.5 gr.	33.9 gr.	35.2 gr.	36.5 gr.	37.9 gr.
WIN 748	33.2 gr.	34.7 gr.	36.2 gr.	37.8 gr.	
IMR 4350		38.0 gr.	39.5 gr.	41.0 gr.	42.5 gr.
WIN 760		37.7 gr.	39.4 gr.	41.1 gr.	42.8 gr.

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II

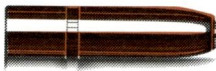
175 GRAIN BULLETS:

SECTIONAL DENSITY: .310
DIAMETER: .284"

#2850 SP
Ballistic Coefficient — .462
C.O.L. — 2.800"



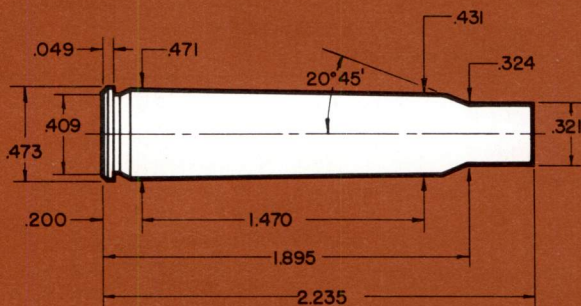
#2855 RN
Ballistic Coefficient — .285
C.O.L. — 2.785"



POWDER	VELOCITY			
	2000 fps	2100 fps	2200 fps	2300 fps
IMR 4064	32.7 gr.	34.0 gr.	35.3 gr.	36.6 gr.
IMR 4320	32.7 gr.	34.1 gr.	35.4 gr.	36.8 gr.
WIN 748	33.1 gr.	34.7 gr.	36.2 gr.	37.8 gr.
WIN 760	36.7 gr.	38.2 gr.	39.8 gr.	41.3 gr.
IMR 4350		37.8 gr.	39.8 gr.	41.8 gr.

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

 Indicates maximum load • use with caution



7 x 57mm MAUSER

RIFLE: RUGER 77

BARREL: 22", 1 in 9½" TWIST

CASE: WINCHESTER

PRIMER: FEDERAL 210

BULLET DIAMETER: .284"

MAXIMUM C.O.L.: 3.065"

MAX. CASE LENGTH: 2.235"

CASE TRIM LENGTH: 2.225"

Originally a military round, the 7 x 57mm is a popular and effective sporting round. Mauser developed the cartridge in 1892 and the Americans encountered the 7 x 57mm in 1898 when they faced the Spanish in Cuba. Most American manufacturers provide loaded ammunition, but few offer rifles chambered for the 7 x 57mm. Those who manufacture rifles in 7 x 57mm do so primarily to maintain a strong market for American rifles. It is more popular in the European countries where rimmed versions of the 7 x 57 mm are also available — these are usually chambered in combination guns and the maximum loads listed here should be reduced 10 to 15%. This data was developed in the strong and modern Ruger Model 77. *This data should not be used in the older Mauser Model 93 or 95 and should be approached cautiously in Model 98 Mausers.* As with all older military rifles careful inspection by a knowledgeable gunsmith is highly recommended.

Ballistically, the 7mm Mauser, as shown here, is only slightly less powerful than the 270 Winchester, 280 Remington, and the 284 Winchester. The cartridge is more than adequate for nearly all North American big game and a great many of the plains game of Africa.

Powders that produced best results in our rifle were IMR 4064, Winchester 760, and H450. The 139 grain Spire Point and 154 grain Spire Point make ideal medium game bullets, with the 175 grain Spire Point being better suited for elk and other large game.

Since silhouette shooting has become such a popular sport, the 7mm Mauser has yet another area to display its versatility. With its mild recoil, flat trajectory, and the Hornady 162 grain Match Boat Tail Hollow Point, the 7 x 57mm is an excellent choice.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP

Ballistic Coefficient — .279
C.O.L. — 2.950"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4895	39.8 gr.	41.7 gr.	43.5 gr.	45.4 gr.	47.2 gr.
H335	39.7 gr.	42.1 gr.	44.5 gr.	46.9 gr.	
IMR 3031	40.9 gr.	43.0 gr.	45.1 gr.		
IMR 4064	43.6 gr.	45.3 gr.	47.1 gr.	48.8 gr.	
WIN 748	46.7 gr.	48.2 gr.	49.6 gr.	51.1 gr.	52.6 gr.
WIN 760	51.3 gr.	52.8 gr.	54.4 gr.	56.0 gr.	

See Ballistics Tables on pages 95-97, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 3.000"

**#2815 HP**

Ballistic Coefficient — .334
C.O.L. — 3.000"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4895	40.5 gr.	41.8 gr.	43.1 gr.	44.4 gr.	45.7 gr.	
IMR 3031	40.6 gr.	42.0 gr.	43.5 gr.	45.0 gr.		
IMR 4320	42.5 gr.	43.9 gr.	45.2 gr.	46.6 gr.	48.0 gr.	
IMR 4064	42.6 gr.	43.8 gr.	44.9 gr.	46.0 gr.		
WIN 760	46.6 gr.	48.3 gr.	49.9 gr.	51.6 gr.	53.3 gr.	54.9 gr.
IMR 4350	47.8 gr.	49.2 gr.	50.7 gr.	52.1 gr.	53.6 gr.	
IMR 4831	49.5 gr.	51.5 gr.	52.8 gr.	54.4 gr.		
H450	51.4 gr.	53.2 gr.	55.0 gr.	56.9 gr.	58.7 gr.	

See Ballistics Tables on pages 97-99, 100-102, Vol. II

 Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 3.000"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 3.000"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4895	39.7 gr.	41.1 gr.	42.5 gr.		
IMR 3031	40.2 gr.	41.6 gr.	42.9 gr.	44.3 gr.	
IMR 4064	41.6 gr.	42.8 gr.	44.1 gr.	45.3 gr.	
IMR 4320	42.0 gr	43.3 gr.	44.6 gr.	46.0 gr.	
WIN 760	44.5 gr.	46.5 gr.	48.5 gr.	50.4 gr.	52.4 gr.
IMR 4350	46.7 gr.	48.3 gr.	49.9 gr.	51.4 gr.	53.0 gr.
IMR 4831	48.2 gr.	49.7 gr.			
H450	49.4 gr.	51.4 gr.	53.4 gr.	55.4 gr.	57.3 gr.

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY:	.273
DIAMETER:	.284"

#2830 SP
Ballistic Coefficient — .433
C.O.L. — 3.000"



#2835 RN
Ballistic Coefficient — .279
C.O.L. — 2.898"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4895	37.2 gr.	38.7 gr.	40.2 gr.			
IMR 3031	37.8 gr.	39.2 gr.	40.6 gr.	42.0 gr.		
IMR 4064	38.8 gr.	40.1 gr.	41.3 gr.	42.6 gr.		
IMR 4320	39.1 gr.	40.5 gr.	41.9 gr.	43.4 gr.	44.8 gr.	
WIN 760	42.5 gr.	44.3 gr.	46.0 gr.	47.7 gr.	49.5 gr.	51.2 gr.
IMR 4350	43.0 gr.	44.6 gr.	46.1 gr.	47.7 gr.		
IMR 4831	45.4 gr.	46.8 gr.				
H450	46.2 gr.	47.7 gr.	49.7 gr.	51.5 gr.	53.3 gr.	55.0 gr.

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

162 GRAIN BULLETS:

SECTIONAL DENSITY:	.287
DIAMETER:	.284"

#2840 BTHP
Ballistic Coefficient — .534
C.O.L. — 3.000"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 3.000"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	37.3 gr.	38.7 gr.	40.0 gr.		
IMR 4895	37.4 gr.	38.7 gr.	39.9 gr.	41.2 gr.	
IMR 4064	38.1 gr.	39.5 gr.	40.9 gr.	42.3 gr.	
IMR 4320	38.4 gr.	39.9 gr.	41.4 gr.	43.0 gr.	
WIN 760	42.6 gr.	44.3 gr.	46.0 gr.	47.7 gr.	49.4 gr.
IMR 4350	42.7 gr.	44.2 gr.			
IMR 4831	43.5 gr.	45.2 gr.	46.9 gr.		
H450	44.7 gr.	46.9 gr.	49.2 gr.	51.4 gr.	53.6 gr.

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II

 Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY: .310
DIAMETER: .284"

#2850 SP

Ballistic Coefficient — .462
C.O.L. — 3.025"



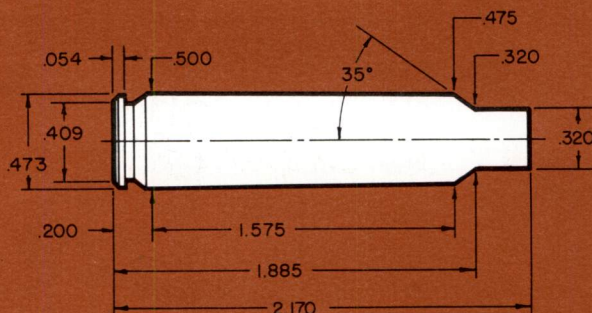
#2855 RN

Ballistic Coefficient — .285
C.O.L. — 3.015"



POWDER	VELOCITY			
	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	36.8 gr.	38.4 gr.	40.0 gr.	
IMR 4895	37.2 gr.	38.8 gr.	40.3 gr.	41.9 gr.
IMR 4064	37.9 gr.	39.4 gr.	40.9 gr.	42.4 gr.
IMR 4320	38.8 gr.	40.3 gr.	41.8 gr.	
WIN 760	42.2 gr.	43.8 gr.	45.4 gr.	47.0 gr.
IMR 4350	42.9 gr.	44.3 gr.		
IMR 4831	44.2 gr.	45.6 gr.		
H450	45.3 gr.	47.2 gr.	49.3 gr.	50.9 gr.

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II



284 WINCHESTER

RIFLE: WINCHESTER M 70 CUSTOM
BARREL: 22", 1 in 10" TWIST
CASE: WINCHESTER
PRIMER: REMINGTON 9½

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.950"
MAX. CASE LENGTH: 2.170"
CASE TRIM LENGTH: 2.160"

The 284 Winchester is a 7mm cartridge designed to approximate 270 Winchester performance and still function through Winchester's short actioned Model 88 and Model 100 rifles. Ruger made a limited number of M77 in .284 as did Savage in their M99 lever action. Browning lists the .284 as available in the BLR lever action. To accomplish this performance, Winchester developed a unique case with a rebated rim the size of the 308's, a larger case head, and a body nearly the size of the big belted magnums.

The interesting new 284 case inspired a great surge of wildcatting activity. The case has been necked down to 22, 6mm, 25, and 6.5mm calibers and up to 30 and 35 calibers, producing wildcats similar to those based on the 30-06 case but better adapted to short actions. One problem of the 284's design is the short case neck which means that long bullets must be seated deeply in the case in lever and autoloading actions. Custom bolt actions can be made to take this problem into account and thus maintain the full velocity potential of the 284. Loaded in the shorter actions, the bullets must be seated deeper (to a maximum C.O.L. of 2.800") to fit in the magazines and actions of these firearms. Accordingly, the next to maximum load list should be considered the top load and should be approached cautiously. Also, while these are strong actions, they have limited camming action during extraction of the fired case and less than maximum loads are more easily extracted and are therefore desirable.

In our custom Model 70 test rifle, 154 grain Hornady Spire Points could be driven up to 2900 fps, and all 7mm bullets delivered excellent accuracy. The 284 is adequate for all North American game, as are its ballistic counterparts the 270 and the 280.

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 2.905"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 2.905"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	42.0 gr.	44.0 gr.	46.0 gr.	48.0 gr.	
IMR 4064	43.8 gr.	45.6 gr.	47.4 gr.	49.2 gr.	
H4895	45.1 gr.	46.8 gr.	48.5 gr.	50.3 gr.	52.0 gr.
IMR 4320	46.5 gr.	48.1 gr.	49.8 gr.	51.5 gr.	53.2 gr.
H380	46.1 gr.	48.4 gr.	50.7 gr.	52.9 gr.	55.2 gr.
IMR 4350	52.1 gr.	53.6 gr.	55.0 gr.	56.5 gr.	58.0 gr.
H4831	54.5 gr.	56.1 gr.	57.7 gr.	59.4 gr.	61.0 gr.

See Ballistics Tables on pages 95-97, 97-99, 100-102, Vol. II

284 WINCHESTER



Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 2.885"



#2825 BTSP

Ballistic Coefficient — .453
C.O.L. — 2.885"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	42.2 gr.	44.3 gr.	46.4 gr.		
IMR 4064	43.3 gr.	45.2 gr.	47.2 gr.	49.1 gr.	
H4895	44.7 gr.	46.5 gr.	48.3 gr.	50.9 gr.	
IMR 4320	45.3 gr.	47.1 gr.	49.0 gr.	50.9 gr.	
H380	46.3 gr.	48.5 gr.	50.7 gr.	52.9 gr.	
IMR 4350	50.0 gr.	51.8 gr.	53.5 gr.	55.3 gr.	57.1 gr.
H4831	52.8 gr.	54.4 gr.	56.1 gr.	57.7 gr.	59.3 gr.

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.950"



#2835 RN

Ballistic Coefficient — .279
C.O.L. — 2.848"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	40.5 gr.	42.5 gr.	44.4 gr.	46.3 gr.	
IMR 4064	40.9 gr.	42.9 gr.	44.9 gr.	46.8 gr.	
H4895	42.2 gr.	44.2 gr.	46.1 gr.	48.0 gr.	
IMR 4320	42.4 gr.	44.5 gr.	46.6 gr.	48.7 gr.	
H380	43.7 gr.	45.9 gr.	48.2 gr.	50.4 gr.	
IMR 4350	46.8 gr.	48.7 gr.	50.7 gr.	52.6 gr.	54.5 gr.
H4831	48.8 gr.	50.9 gr.	52.9 gr.	55.0 gr.	57.1 gr.
H450	50.9 gr.	53.0 gr.	55.0 gr.	57.1 gr.	59.1 gr.

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

284 WINCHESTER



Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY: .310
DIAMETER: .284"

#2850 SP
Ballistic Coefficient — .462
C.O.L. — 2.905"



#2855 RN
Ballistic Coefficient — .285
C.O.L. — 2.895"

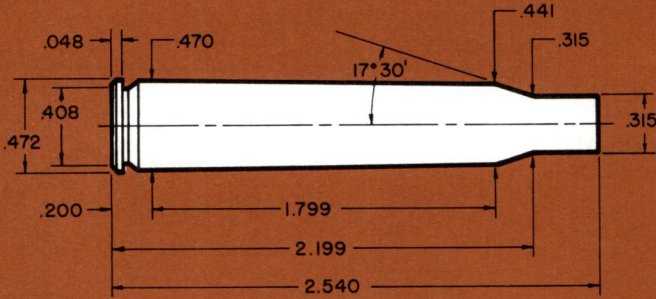


POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	37.7 gr.	39.8 gr.	41.9 gr.	44.1 gr.	
IMR 4064	38.9 gr.	40.9 gr.	42.9 gr.	44.9 gr.	
H4895	40.2 gr.	42.2 gr.	44.1 gr.	46.0 gr.	
IMR 4320	40.4 gr.	42.5 gr.	44.5 gr.	46.6 gr.	
H380	41.4 gr.	43.7 gr.	46.0 gr.	48.4 gr.	
IMR 4350	44.8 gr.	46.5 gr.	48.2 gr.	50.0 gr.	51.7 gr.
H4831	46.6 gr.	48.5 gr.	50.5 gr.	52.4 gr.	54.3 gr.
H450	48.2 gr.	50.2 gr.	52.2 gr.	54.3 gr.	56.3 gr.

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II



Indicates maximum load • use with caution



280 REMINGTON/7mm EXPRESS REMINGTON

RIFLE: REMINGTON MODEL 700
BARREL: 22", 1 in 10" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 9½

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 3.345"
MAX. CASE LENGTH: 2.540"
CASE TRIM LENGTH: 2.530"

In 1957 Remington introduced the 280 in their Model 740 autoloader. It was not until later that the round was chambered in their bolt action models.

The 280 is based on the 30-06 case and is slightly longer than the 270 thus preventing accidental chambering of the 280 round in a 270 rifle.

The 280 is not as popular as the 270 but is catching up. The major reason for this probably lies in the fact that it was not offered to the shooting public until 32 years after the 270 and offered no appreciable gain in ballistics. However, the 280 does have greater loading potential than the 270 because of the wider range of bullets available.

In the early 1980s Remington renamed the 280 Remington, the 7mm Express Remington. The dimensions of the cartridge case were the same, but with the new, improved, slow burning powders, maximum velocities should increase 100 fps, according to Remington. However, a few years later, the name was changed back to the .280 Remington. Remington's efforts to popularize a fine cartridge are to be lauded, as the 280 has been, and always will be, an excellent big game cartridge capable of taking any big game on the North American continent. In most cases, its ballistics are better than or equal to those of the 270, the standard by which many cartridges are judged. It is interesting that a similar cartridge, the 7 X 64 Brenneke, was produced in Germany in the early part of the century. Although similar in ballistics and dimensions, they are not interchangeable.

IMR 4350 and H4831 gave the best results in the 280 Remington throughout the range of bullets.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP
Ballistic Coefficient — .279
C.O.L. — 3.330"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	41.1 gr.	42.6 gr.	44.1 gr	45.7 gr.	47.2 gr.
AA 2520	41.5 gr.	42.9 gr.	44.3 gr.	45.7 gr.	
H4895	40.4 gr.	42.3 gr.	44.3 gr.	46.3 gr.	
RL-15		42.3 gr.	44.9 gr.	47.5 gr.	50.1 gr.
IMR 4320	43.5 gr.	45.0 gr.	46.5 gr.		
H380	46.2 gr.	48.3 gr.	50.4 gr.	52.5 gr.	
WIN 760	47.3 gr.	49.6 gr.	51.8 gr.	54.0 gr.	
IMR 4350	50.3 gr.	52.4 gr.	54.6 gr.	56.7 gr.	58.8 gr.

See Ballistics Tables on pages 95-97, Vol. II

 Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 3.330"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 3.315"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	39.3 gr.	41.2 gr.	43.0 gr.	44.8 gr.		
H4895	39.3 gr.	41.3 gr.	43.4 gr.	45.4 gr.		
IMR 4320	40.9 gr.	42.6 gr.	44.2 gr.			
IMR 4064	42.0 gr.	44.1 gr.	46.1 gr.	48.0 gr.	50.0 gr.	
H380	44.5 gr.	46.8 gr.	49.1 gr.	51.3 gr.		
WIN 760	46.5 gr.	48.4 gr.	50.4 gr.	52.3 gr.		
IMR 4350		50.4 gr.	52.2 gr.	53.9 gr.	55.7 gr.	57.4 gr.
H4350	50.0 gr.	51.7 gr.	53.4 gr.	55.1 gr.	56.8 gr.	
RL-19	51.6 gr.	53.4 gr.	55.3 gr.	57.1 gr.	58.9 gr.	
H4831	52.9 gr.	54.7 gr.	56.6 gr.	58.4 gr.	60.3 gr.	

See Ballistics Tables on pages 97-99, 100-102, Vol. II

280 REMINGTON/7mm EXPRESS REMINGTON

Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY:	.246
DIAMETER:	.284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 3.345"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 3.345"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		39.4 gr.	41.2 gr.	43.0 gr.	44.8 gr.	
IMR 4320	39.4 gr.	40.9 gr.	42.5 gr.			
H4895	39.6 gr.	41.3 gr.	43.0 gr.	44.7 gr.	46.4 gr.	
IMR 4064	41.6 gr.	43.4 gr.	45.2 gr.	47.0 gr.	48.9 gr.	
H380	43.4 gr.	45.3 gr.	47.2 gr.	49.1 gr.	51.0 gr.	
WIN 760	45.1 gr.	47.1 gr.	49.2 gr.	51.2 gr.	53.2 gr.	
H4350	48.1 gr.	49.8 gr.	51.6 gr.	53.3 gr.	55.1 gr.	
IMR 4350	49.1 gr.	50.7 gr.	52.3 gr.	53.8 gr.	55.4 gr.	57.0 gr.
RL-19	49.5 gr.	51.4 gr.	53.4 gr.	55.4 gr.	57.4 gr.	
H4831		53.0 gr.	54.6 gr.	56.3 gr.	57.9 gr.	59.5 gr.

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II

 Indicates maximum load • use with caution

154 GRAIN BULLETS:**SECTIONAL DENSITY:****.273****DIAMETER:****.284"****#2830 SP****Ballistic Coefficient — .433****C.O.L. — 3.345"****#2835 RN****Ballistic Coefficient — .279****C.O.L. — 3.243"**

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	36.9 gr.	39.0 gr.	41.1 gr.	43.2 gr.		
H4895	37.8 gr.	39.7 gr.	41.6 gr.	43.5 gr.		
IMR 4320	38.8 gr.	40.3 gr.	41.9 gr.			
IMR 4064	39.8 gr.	41.6 gr.	43.5 gr.	45.4 gr.		
H380	41.1 gr.	43.5 gr.	46.0 gr.	48.4 gr.		
WIN 760	43.9 gr.	45.8 gr.	47.7 gr.	49.6 gr.		
IMR 4350		46.8 gr.	48.8 gr.	50.7 gr.	52.7 gr.	54.7 gr.
H4350			49.5 gr.	51.6 gr.	53.6 gr.	55.7 gr.
RL-19		49.4 gr.	51.4 gr.	53.4 gr.	55.4 gr.	57.4 gr.
H4831		49.1 gr.	51.4 gr.	53.7 gr.	56.0 gr.	58.3 gr.
H450		52.8 gr.	55.5 gr.	58.2 gr.	60.9 gr.	

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP MATCH
Ballistic Coefficient — .534
C.O.L. — 3.330"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 3.330"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4320	38.6 gr.	40.5 gr.				
IMR 3031	38.3 gr.	40.0 gr.	41.6 gr.	43.2 gr.		
IMR 4064	40.0 gr.	41.8 gr.	43.6 gr.	45.3 gr.		
H380	41.1 gr.	43.6 gr.	46.1 gr.	48.5 gr.		
WIN 760	42.6 gr.	44.8 gr.	47.0 gr.	49.1 gr.		
H4350		47.1 gr.	49.2 gr.	51.3 gr.		
IMR 4350		45.4 gr.	47.5 gr.	49.6 gr.	51.7 gr.	53.8 gr.
H4831	48.1 gr.	50.0 gr.	52.0 gr.	53.9 gr.	55.8 gr.	
RL-19			50.3 gr.	52.4 gr.	54.5 gr.	56.6 gr.
H450		52.4 gr.	54.6 gr.	56.9 gr.	59.1 gr.	
IMR 7828		51.7 gr.	53.3 gr.	55.0 gr.	56.7 gr.	58.4 gr.

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II

 Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY:	.310
DIAMETER:	.284"

#2850 SP
Ballistic Coefficient — .462
C.O.L. — 3.330"



#2855 RN
Ballistic Coefficient — .285
C.O.L. — 3.320"



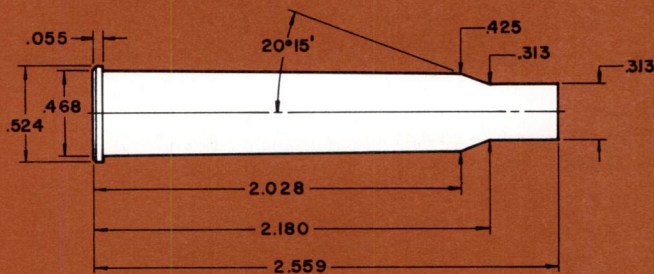
POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 760	43.6 gr.	45.6 gr.	47.5 gr.		
IMR 4350	43.7 gr.	45.7 gr.	47.7 gr.	49.8 gr.	51.9 gr.
H4350	45.8 gr.	47.9 gr.	50.0 gr.		
RL-19	45.9 gr.	48.0 gr.	50.3 gr.	52.5 gr.	54.8 gr.
H4831	45.3 gr.	48.2 gr.	51.1 gr.	54.0 gr.	
IMR 7828	49.2 gr.	51.2 gr.	53.3 gr.	55.4 gr.	
H450	50.2 gr.	52.5 gr.	54.9 gr.	57.2 gr.	

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

280 REMINGTON/7mm EXPRESS REMINGTON



Indicates maximum load • use with caution



7x65R

RIFLE: MAUSER 66
BARREL: 26", 1 in 9¼" TWIST
CASE: RWS
PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 3.350"
MAX. CASE LENGTH: 2.559"
CASE TRIM LENGTH: 2.549"

The 7x65R is a cartridge developed in 1917 by the German ballistican Wilhelm Brenneke. Its popularity remains mostly in Europe and is chambered most often in double rifles, drillings, and single shots.

Basically, the 7x65R is similar to the 280 Remington in case capacity and dimensions although it possesses a rim. As a result anything hunted with the 280 Remington, can be hunted with the 7x65R.

Caution must be used when using the data presented here, as this data was obtained with a strong bolt action Mauser rifle. Normally, combination guns are not capable of handling loads equivalent to that of the bolt action. For this reason, loads should be reduced 10 to 15% when loading for combination guns.

Best accuracy and uniformity in our test rifle was obtained with IMR 4831 and IMR 4350.

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 3.300"

**#2815 HP**

Ballistic Coefficient — .334
C.O.L. — 3.300"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	44.4 gr.	45.7 gr.	47.0 gr.	48.3 gr.	49.6 gr.
IMR 4350	49.9 gr.	51.1 gr.	52.4 gr.	53.7 gr.	54.9 gr.
IMR 4831	52.1 gr.	53.3 gr.	54.4 gr.	55.6 gr.	

See Ballistics Tables on pages 97-99, 100-102, Vol. II

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 3.350"

**#2825 BTSP**

Ballistic Coefficient — .453
C.O.L. — 3.350"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	43.9 gr.	45.3 gr.	46.6 gr.	48.0 gr.	
IMR 4350	49.3 gr.	50.6 gr.	52.0 gr.	53.3 gr.	54.7 gr.
IMR 4831	50.6 gr.	52.0 gr.	53.5 gr.	54.9 gr.	

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY:	.273
DIAMETER:	.284"

#2830 SP
Ballistic Coefficient — .433
C.O.L. — 3.340"



#2835 RN
Ballistic Coefficient — .279
C.O.L. — 3.238"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	43.0 gr.	44.6 gr.	46.3 gr.		
IMR 4350	46.9 gr.	48.4 gr.	49.9 gr.	51.4 gr.	52.9 gr.
IMR 4831	49.4 gr.	50.9 gr.	52.5 gr.	54.0 gr.	55.6 gr.

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

175 GRAIN BULLETS:

SECTIONAL DENSITY:	.310
DIAMETER:	.284"

#2850 SP
Ballistic Coefficient — .462
C.O.L. — 3.300"



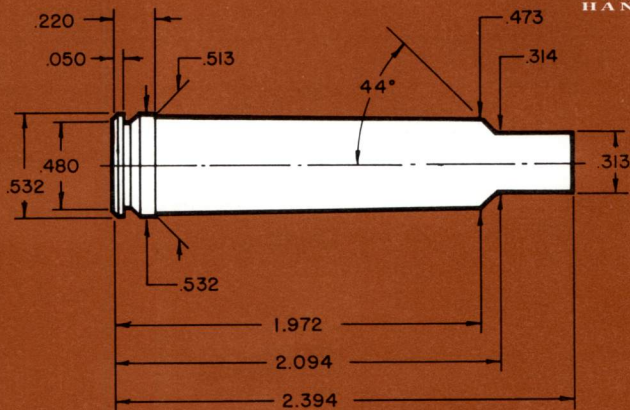
#2855 RN
Ballistic Coefficient — .285
C.O.L. — 3.290"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	40.9 gr.	42.5 gr.	44.1 gr.	45.7 gr.	
IMR 4350	43.7 gr.	45.4 gr.	47.2 gr.	49.0 gr.	50.7 gr.
IMR 4831	46.0 gr.	47.9 gr.	49.8 gr.	51.7 gr.	53.6 gr.

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

 Indicates maximum load • use with caution



7 X 61 SHARPE & HART

RIFLE: MAUSER MODEL 1898
BARREL: 24", 1 in 12" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 3.270"
MAX. CASE LENGTH: 2.394"
CASE TRIM LENGTH: 2.384"

The 7 x 61 was developed by the well known handloading authority Phil Sharpe in collaboration with Richard F. Hart as a high velocity 7mm suitable for all North American game. It achieved factory production in 1953 in rifles produced by the Danish firm of Schultz and Larson. Ammunition is now produced by Norma.

Based on an experimental French 7mm military cartridge Sharpe discovered as an ordnance officer in WW II, the commerical version of the cartridge is belted and features a very abrupt shoulder. Its power falls between standard 7mm's and the 7mm Weatherby Magnum or the more recent 7mm Remington Magnum.

The following that the 7 x 61 S&H once enjoyed has been far outstripped by the popularity of the 7mm Remington Magnum. The older cartridge remains, however, a respectable performer, and for Sharpe & Hart owners who'd care to test its potential for long range target shooting we have included loads for our 7mm 162 grain Boat Tail Hollow Point bullet.

If you want to see how the 7 x 61 stands in the company of the larger 7mm's, use the Ballistic Tables in Volume II in conjunction with loading data for the cartridges.

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 3.205"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 3.205"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	45.2 gr.	47.1 gr.	49.1 gr.	51.1 gr.	53.1 gr.	
H4895	46.6 gr.	48.8 gr.	51.1 gr.	53.3 gr.	55.5 gr.	
IMR 4064	47.2 gr.	49.2 gr.	51.3 gr.	53.4 gr.	55.5 gr.	
IMR 4320	46.8 gr.	49.1 gr.	51.4 gr.	53.7 gr.	56.0 gr.	
H380	49.0 gr.	51.4 gr.	53.8 gr.	56.2 gr.	58.6 gr.	
WIN 760	53.1 gr.	55.3 gr.	57.5 gr.	59.7 gr.		
IMR 4350	54.4 gr.	56.1 gr.	57.7 gr.	59.4 gr.	61.1 gr.	62.7 gr.
H4831		57.8 gr.	59.6 gr.	61.4 gr.	63.2 gr.	65.0 gr.
H450		58.8 gr.	60.8 gr.	62.8 gr.	64.9 gr.	66.9 gr.

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 3.270"



#2835 RN

Ballistic Coefficient — .279
C.O.L. — 3.167"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	41.6 gr.	44.0 gr.	46.3 gr.	48.6 gr.	50.9 gr.	
H4895	44.0 gr.	46.1 gr.	48.2 gr.	50.3 gr.	52.4 gr.	
IMR 4064	43.7 gr.	46.0 gr.	48.2 gr.	50.5 gr.	52.7 gr.	
IMR 4320	44.4 gr.	46.7 gr.	48.9 gr.	51.1 gr.	53.3 gr.	55.6 gr.
H380	46.2 gr.	48.4 gr.	50.6 gr.	52.8 gr.	55.0 gr.	
WIN 760		53.6 gr.	57.3 gr.			
IMR 4350	51.3 gr.	53.1 gr.	54.9 gr.	56.6 gr.	58.4 gr.	60.2 gr.
H4831		55.6 gr.	57.3 gr.	59.0 gr.	60.6 gr.	62.3 gr.
H450		56.2 gr.	58.1 gr.	60.0 gr.	61.9 gr.	63.8 gr.

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

7 X 61 SHARPE & HART

162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP
Ballistic Coefficient — .534
C.O.L. — 3.155"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 3.155"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4895		46.1 gr.	47.7 gr.	49.3 gr.	50.9 gr.	
H380		46.4 gr.	48.4 gr.	50.3 gr.	52.3 gr.	
IMR 4320	45.0 gr.	46.9 gr.	48.7 gr.	50.6 gr.	52.5 gr.	54.3 gr.
IMR 4350		49.8 gr.	51.9 gr.	53.9 gr.	56.0 gr.	58.1 gr.
H450			57.2 gr.	59.0 gr.	60.7 gr.	62.4 gr.
H4831		55.8 gr.	57.6 gr.	59.5 gr.	61.3 gr.	

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II

 Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY:

.310

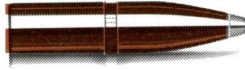
DIAMETER:

.284"

#2850 SP

Ballistic Coefficient — .462

C.O.L. — 3.255"



#2855 RN

Ballistic Coefficient — .285

C.O.L. — 3.265"

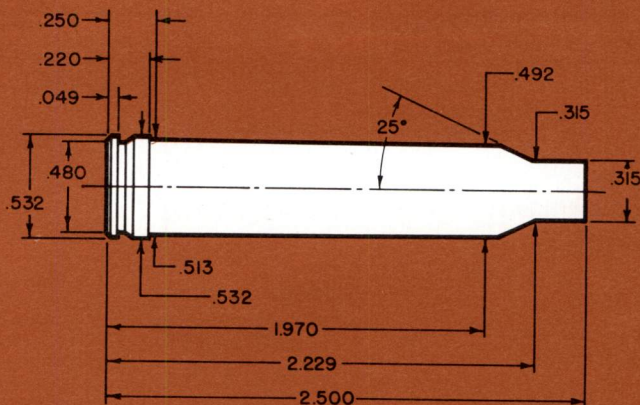


POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	42.0 gr.	44.3 gr.	46.7 gr.	49.1 gr.		
H4895	43.9 gr.	46.2 gr.	48.5 gr.	50.8 gr.		
IMR 4064	43.8 gr.	46.2 gr.	48.6 gr.	51.0 gr.	53.4 gr.	
IMR 4320		46.7 gr.	49.1 gr.	51.6 gr.	54.1 gr.	
H380		48.7 gr.	51.3 gr.	54.0 gr.	56.5 gr.	
IMR 4350		51.8 gr.	54.0 gr.	56.1 gr.	58.3 gr.	60.5 gr.
H4831		53.9 gr.	56.0 gr.	58.2 gr.	60.3 gr.	62.5 gr.
H450		54.9 gr.	57.3 gr.	59.8 gr.	62.2 gr.	

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

7 X 61 SHARPE & HART

 Indicates maximum load • use with caution



7mm REMINGTON MAGNUM

RIFLE: REMINGTON 700 BDL
BARREL: 24", 1 in 9" TWIST
CASE: FRONTIER
PRIMER: REMINGTON 9½M

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 3.290"
MAX. CASE LENGTH: 2.500"
CASE TRIM LENGTH: 2.490"

In 1962 Remington introduced their 7mm Magnum in their also new Model 700 bolt action rifle. In almost three decades of use, this cartridge has become extremely popular, rivaling the 270, and possessing enough power to account for anything from varmints to moose. Its power is little different than the 7 X 61 Sharpe & Hart or the 7mm Weatherby Magnum, but its appeal arises primarily from availability of loaded ammunition and rifles from the numerous arms and ammunition companies, acceptable recoil, good accuracy and versatility. Another plus for the 7mm Magnum is that it is easier on barrels than such hot calibers as the 264 Winchester Magnum or 257 Weatherby Magnum. It is probably the most popular magnum rifle caliber sold today.

Our particular rifle gave more than adequate results with all powders listed — most powders tested had slow burning rates since the faster powders would not yield adequate velocity. IMR 4831 was the best overall powder for our rifle. It produced velocities at or near the top with all bullet weights and provided the best overall groups with all the bullets. The 7mm Magnum is capable of fine accuracy, and is therefore a good candidate for the 162 grain Match Boat Tail Hollow Point for long range target shooting.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP
Ballistic Coefficient — .279
C.O.L. — 3.185"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
RL-15	53.2 gr.	55.0 gr.	56.8 gr.	58.6 gr.	60.4 gr.
IMR 4320	52.4 gr.	54.8 gr.	57.3 gr.		
H414		58.6 gr.	60.7 gr.	62.9 gr.	65.1 gr.
WIN 760		59.2 gr.	61.4 gr.	63.6 gr.	65.7 gr.
IMR 4350	61.7 gr.	63.9 gr.	66.1 gr.		
H4350	62.9 gr.	64.8 gr.	66.6 gr.	68.4 gr.	70.2 gr.
IMR 4831	64.3 gr.	66.1 gr.	67.9 gr.	69.7 gr.	71.5 gr.
H450	68.3 gr.	70.9 gr.	73.6 gr.	76.2 gr.	78.8 gr.

See Ballistics Tables on pages 95-97, Vol. II

 Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY:	.213
DIAMETER:	.284"

#2810 SP
Ballistic Coefficient — .350
C.O.L. — 3.240"



#2815 HP
Ballistic Coefficient — .334
C.O.L. — 3.230"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4320	48.6 gr.	50.6 gr.	52.6 gr.	54.6 gr.		
RL-15	48.9 gr.	51.0 gr.	53.0 gr.	55.1 gr.		
WIN 760	53.0 gr.	55.1 gr.	57.2 gr.	59.3 gr.	61.5 gr.	
H414	53.4 gr.	55.4 gr.	57.4 gr.	59.4 gr.	61.5 gr.	
IMR 4350	56.3 gr.	58.2 gr.	60.2 gr.	62.2 gr.	64.2 gr.	
H4350	57.6 gr.	59.5 gr.	61.4 gr.	63.4 gr.	65.3 gr.	
IMR 4831	58.3 gr.	60.3 gr.	62.3 gr.	64.3 gr.	66.2 gr.	
H450		65.0 gr.	67.6 gr.	70.2 gr.	72.8 gr.	75.4 gr.

See Ballistics Tables on pages 97-99, 100-102, Vol. II

 Indicates maximum load • use with caution

139 GRAIN BULLETS:**SECTIONAL DENSITY:****.246****DIAMETER:****.284"****#2820 SP****Ballistic Coefficient — .392****C.O.L. — 3.290"****#2825 BTSP****Ballistic Coefficient — .453****C.O.L. — 3.290"**

POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H414	53.1 gr.	55.5 gr.	57.9 gr.	60.2 gr.		
WIN 760	53.3 gr.	55.7 gr.	58.1 gr.	60.5 gr.		
IMR 4350		56.7 gr.	59.1 gr.	61.5 gr.	63.9 gr.	
IMR 4831	57.9 gr.	60.0 gr.	62.1 gr.	64.1 gr.	66.2 gr.	
H4350	57.9 gr.	60.1 gr.	62.2 gr.	64.3 gr.		
RL-19	59.5 gr.	61.4 gr.	63.4 gr.	65.3 gr.	67.3 gr.	
RL-22	61.5 gr.	63.5 gr.	65.5 gr.	67.5 gr.	69.5 gr.	
IMR 7828	63.4 gr.	65.1 gr.	66.9 gr.	68.6 gr.	70.4 gr.	72.1 gr.
H450		63.8 gr.	66.5 gr.	69.3 gr.	72.0 gr.	
H1000	68.1 gr.	70.4 gr.	72.7 gr.	75.0 gr.		

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II

7mm REMINGTON MAGNUM

 Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY:	.273
DIAMETER:	.284"

#2830 SP
Ballistic Coefficient — .433
C.O.L. — 3.290"



#2835 RN
Ballistic Coefficient — .279
C.O.L. — 3.188"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H414	50.6 gr.	52.7 gr.	54.9 gr.	57.0 gr.	
WIN 760	50.5 gr.	52.8 gr.	55.1 gr.	57.4 gr.	
IMR 4350	51.8 gr.	54.0 gr.	56.3 gr.	58.5 gr.	
IMR 4831	53.1 gr.	55.5 gr.	57.8 gr.	60.1 gr.	
H4350	53.9 gr.	56.0 gr.	58.2 gr.	60.4 gr.	62.5 gr.
RL-19		57.7 gr.	59.8 gr.	61.9 gr.	64.0 gr.
RL-22		58.5 gr.	60.9 gr.	63.2 gr.	65.6 gr.
IMR 7828	59.5 gr.	61.5 gr.	63.6 gr.	65.6 gr.	67.7 gr.
H450		61.7 gr.	64.2 gr.	66.8 gr.	69.3 gr.
H1000		64.7 gr.	67.3 gr.	70.0 gr.	

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II



Indicates maximum load • use with caution

162 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.287
.284"

#2840 BTHP MATCH
Ballistic Coefficient — .534
C.O.L. — 3.290"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 3.290"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
WIN 760	50.5 gr.	53.2 gr.	55.9 gr.		
IMR 4350	52.0 gr.	54.5 gr.	57.0 gr.	59.5 gr.	
IMR 4831	53.1 gr.	55.5 gr.	57.8 gr.	60.1 gr.	
H4350	53.7 gr.	56.2 gr.	58.8 gr.	61.3 gr.	
RL-19	55.5 gr.	57.7 gr.	59.9 gr.	62.1 gr.	64.3 gr.
RL-22	56.3 gr.	58.7 gr.	61.2 gr.	63.6 gr.	66.0 gr.
IMR 7828	58.8 gr.	61.2 gr.	63.5 gr.	65.9 gr.	
H450		61.2 gr.	63.9 gr.	66.6 gr.	69.3 gr.
H1000	62.2 gr.	64.8 gr.	67.4 gr.	70.0 gr.	

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II

7mm REMINGTON MAGNUM

Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY:	.310
DIAMETER:	.284"

#2850 SP

Ballistic Coefficient — .462
C.O.L. — 3.290"



#2855 RN

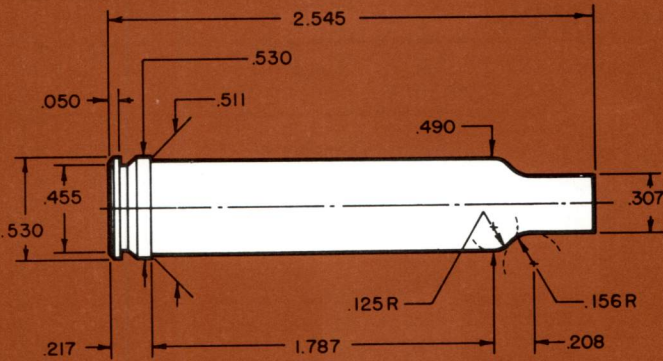
Ballistic Coefficient — .285
C.O.L. — 3.280"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4350	50.0 gr.	52.6 gr.	55.2 gr.	57.8 gr.	
IMR 4831	51.2 gr.	53.7 gr.	56.2 gr.	58.6 gr.	
H4350	53.6 gr.	54.1 gr.	56.6 gr.	59.1 gr.	
RL-19		54.5 gr.	57.1 gr.	59.7 gr.	62.3 gr.
RL-22		55.9 gr.	58.4 gr.	60.9 gr.	63.4 gr.
IMR 7828		58.0 gr.	60.6 gr.	63.2 gr.	65.7 gr.
H450	56.1 gr.	59.3 gr.	62.4 gr.		
H1000	60.7 gr.	63.6 gr.	66.5 gr.		

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

 Indicates maximum load • use with caution



7mm WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 24", 1 in 12" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 3.375"
MAX. CASE LENGTH: 2.545"
CASE TRIM LENGTH: 2.535"

When comparing 7mm Magnums ballistically, the Weatherby has a slight edge over the 7mm Remington Magnum and boasts a strong 200 fps advantage in velocity over the 7 x 61 Sharpe & Hart.

Weatherby introduced this cartridge in 1944 with its popularity growing only moderately since its inception. Basically, its growth has been hampered by the 300 Weatherby Magnum which soundly overshadows the 7mm in power. The 7mm Weatherby case is based on a shortened 300 H&H case and incorporates the familiar Weatherby double radius shoulder.

The 7mm Weatherby Magnum is an excellent cartridge for plains or mountain regions because of its long range, flat trajectory, and good remaining energy. When fired at 3000 fps, the Hornady 175 grain Spire Point still has over 2100 foot pounds of energy left at 300 yards.

Our rifle showed excellent uniformity and accuracy with IMR 4831 throughout the range of bullets. Good results were also obtained with Reloder 22 and IMR 7828. With cartridges of such large case capacity, it is always best to keep loads at near maximum charges to prevent possible hangfires and erratic velocities.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP
Ballistic Coefficient — .279
C.O.L. — 3.250"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
AA 2520	56.5 gr.	58.3 gr.	60.1 gr.	61.9 gr.	63.6 gr.
RL-15	56.7 gr.	58.5 gr.	60.5 gr.	62.4 gr.	64.3 gr.
H380	61.0 gr.	63.5 gr.	66.0 gr.	68.5 gr.	71.0 gr.
WIN 760	64.9 gr.	66.6 gr.	68.3 gr.	70.0 gr.	71.7 gr.
H414	65.2 gr.	66.9 gr.	68.7 gr.	70.4 gr.	72.1 gr.
IMR 4350	66.0 gr.	67.9 gr.	69.9 gr.	71.8 gr.	73.8 gr.

See Ballistics Tables on pages 95-97, Vol. II

 Indicates maximum load • use with caution

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 3.310"



#2811 SSSP

Ballistic Coefficient — .350
C.O.L. — 3.310"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 3.310"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	55.2 gr.	56.7 gr.	58.1 gr.		
RL-15	54.5 gr.	56.5 gr.	58.6 gr.	60.7 gr.	62.8 gr.
IMR 4320	56.8 gr.	58.5 gr.	60.1 gr.		
WIN 760	60.9 gr.	63.1 gr.	65.3 gr.	67.6 gr.	69.8 gr.
H414	61.9 gr.	63.8 gr.	65.7 gr.	67.7 gr.	69.6 gr.
IMR 4350	65.8 gr.	67.1 gr.	68.5 gr.	69.8 gr.	71.1 gr.
H450		68.5 gr.	70.6 gr.	72.7 gr.	74.8 gr.
IMR 4831	67.7 gr.	69.5 gr.	71.2 gr.	73.0 gr.	74.7 gr.
AA 3100	68.1 gr.	70.1 gr.	72.1 gr.	74.1 gr.	
H4831	71.0 gr.	73.0 gr.	74.9 gr.	76.9 gr.	78.8 gr.

See Ballistics Tables on pages 97-99, 100-102, Vol. II

7mm WEATHERBY MAGNUM

 Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY:	.246
DIAMETER:	.284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 3.330"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 3.330"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	54.6 gr.	56.5 gr.	58.3 gr.			
IMR 4320	55.2 gr.	57.1 gr.	59.0 gr.	60.9 gr.		
IMR 4350		62.6 gr.	64.5 gr.	66.4 gr.	68.2 gr.	70.1 gr.
RL-19	63.5 gr.	65.4 gr.	67.3 gr.	69.2 gr.	71.1 gr.	73.0 gr.
H4350	64.6 gr.	66.2 gr.	67.9 gr.	69.5 gr.	71.1 gr.	72.7 gr.
AA 3100	64.2 gr.	66.2 gr.	68.2 gr.	70.2 gr.	72.2 gr.	74.3 gr.
IMR 4831	64.9 gr.	66.6 gr.	68.3 gr.	69.9 gr.		
H450			67.9 gr.	69.9 gr.	71.8 gr.	
H4831	68.5 gr.	70.1 gr.	71.8 gr.	73.5 gr.	75.1 gr.	

See Ballistics Tables on pages 102-104, 107-109, 235, 236, 260-261, 261-262, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP
Ballistic Coefficient — .433
C.O.I. — 3.340"



#2835 RN
Ballistic Coefficient — .279
C.O.I. — 3.340"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	52.2 gr.	54.2 gr.	56.2 gr.	58.2 gr.		
IMR 4320	55.3 gr.	57.2 gr.	59.2 gr.	61.1 gr.		
IMR 4350	60.3 gr.	62.0 gr.	63.8 gr.	65.5 gr.	67.2 gr.	
H4350	61.8 gr.	63.8 gr.	65.9 gr.	67.9 gr.	69.9 gr.	
RL-19		64.3 gr.	66.4 gr.	68.5 gr.	70.6 gr.	
IMR 4831	62.9 gr.	64.8 gr.	66.7 gr.	68.6 gr.		
AA 3100	62.6 gr.	64.8 gr.	66.9 gr.	69.1 gr.	71.3 gr.	
H450			67.2 gr.	69.2 gr.	71.1 gr.	73.1 gr.
H4831	65.8 gr.	67.8 gr.	69.8 gr.	71.7 gr.	73.7 gr.	
IMR 7828		68.8 gr.	70.9 gr.	72.9 gr.	75.0 gr.	77.1 gr.

See Ballistics Tables on pages 109-111, 111-114, 237-238, 262-263, Vol. II

7mm WEATHERBY MAGNUM

162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP Match
Ballistic Coefficient — .534
C.O.L. — 3.375"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 3.375"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	50.6 gr.	53.0 gr.	55.4 gr.	57.7 gr.		
IMR 4320	52.2 gr.	54.4 gr.	56.7 gr.	58.9 gr.		
IMR 4350	55.1 gr.	57.4 gr.	59.7 gr.	62.0 gr.		
IMR 4831	60.4 gr.	62.4 gr.	64.4 gr.	66.4 gr.		
AA 3100		62.4 gr.	64.7 gr.	67.0 gr.	69.2 gr.	
H450	61.9 gr.	63.8 gr.	65.7 gr.	67.7 gr.		
RL-22		64.5 gr.	66.5 gr.	68.5 gr.	70.5 gr.	72.4 gr.
H4831		66.9 gr.	68.8 gr.	70.6 gr.	72.4 gr.	
IMR 7828			68.9 gr.	70.8 gr.	72.7 gr.	74.6 gr.
H870		75.6 gr.	78.4 gr.	81.2 gr.		

See Ballistics Tables on pages 114-116, 116-118, 238-239, 239-240, 263-264, 264-265, Vol. II



Indicates maximum load • use with caution

175 GRAIN BULLETS:

SECTIONAL DENSITY: .310
DIAMETER: .284"

#2850 SP

Ballistic Coefficient - .462
C.O.L. — 3.350"

**#2855 RN**

Ballistic Coefficient — .285
C.O.L. — 3.350"

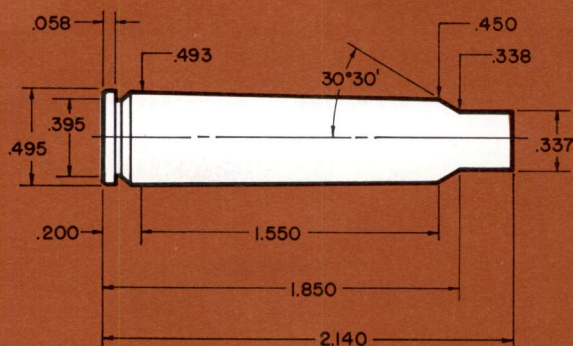


POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	51.6 gr.	53.7 gr.	55.7 gr.			
IMR 4320	52.2 gr.	54.8 gr.	57.3 gr.			
IMR 4350	57.9 gr.	60.0 gr.	62.1 gr.	64.2 gr.	66.3 gr.	
IMR 4831		60.1 gr.	62.5 gr.	64.8 gr.	67.1 gr.	
AA 3100	59.6 gr.	61.8 gr.	64.0 gr.	66.2 gr.	68.4 gr.	
RL-22			64.5 gr.	66.5 gr.	68.4 gr.	70.3 gr.
H450	62.0 gr.	64.0 gr.	65.9 gr.	67.9 gr.		
H4831	63.2 gr.	65.2 gr.	67.2 gr.	69.2 gr.	71.2 gr.	
IMR 7828			67.3 gr.	69.2 gr.	71.0 gr.	72.9 gr.
H1000			73.6 gr.	76.4 gr.	79.2 gr.	

See Ballistics Tables on pages 118-120, 120-123, 240-241, 265-266, Vol. II

7mm WEATHERBY MAGNUM

 Indicates maximum load • use with caution



7.5mm SCHMIDT RUBIN (7.5mm SWISS)

RIFLE: SCHMIDT RUBIN M 1896/11
BARREL: 30.7", 1 in 10.6" TWIST
CASE: SWISS
PRIMER: BERDAN 217B

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.025"
MAX. CASE LENGTH: 2.140"
CASE TRIM LENGTH: 2.130"

Though the 7.5mm Schmidt Rubin (7.5mm Swiss) cartridge is not likely to become this nation's favorite, it has a small, dedicated following.

The 7.5mm Schmidt Rubin, officially adopted by the Swiss in 1889, is a distinctive straight pull bolt action rifle which in four basic models (1899, 1896/11, 1911, and 31) has been in service from its introduction until the present. (Its replacement, the new Model 57 assault rifle also fires the standard Model 11/7.5mm Schmidt Rubin cartridge.) As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

The Model 11/7.5mm Schmidt Rubin cartridge, a more potent version of the first cartridge developed for the 7.5mm rifle, was loaded with a .307" 174 grain bullet to a velocity of 2720 fps. Regular 30 caliber (.308") bullets may be used to reload the cartridge. Reloaders should note, however, that the Model 11 cartridge for which loading data is given is suitable for use only in the newer Model 1896/11, Model 1911, or Model 31 Schmidt Rubin rifles.

Because the case head is not fully supported in Schmidt Rubin rifles, overloads can be extremely dangerous. A ruptured case or blown primer can send hot gas back through the action to wreck both rifle and shooter. *Use brass in good condition and approach maximum loads listed with extra caution.*

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP

Ballistic Coefficient — .295

C.O.L. — 2.815"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	35.5 gr.	37.4 gr.	39.2 gr.	41.1 gr.	43.0 gr.
IMR 4064	37.7 gr.	39.6 gr.	41.5 gr.	43.4 gr.	45.3 gr.
H4895	38.0 gr.	40.0 gr.	42.0 gr.	44.0 gr.	46.0 gr.
IMR 4320	40.4 gr.	42.2 gr.	44.0 gr.	45.8 gr.	47.6 gr.
IMR 4350	45.6 gr.	47.5 gr.	49.3 gr.	51.2 gr.	53.0 gr.

See Ballistics Tables on pages 129-132, Vol. II

7.5mm SCHMIDT RUBIN (7.5mm SWISS)



Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY:	.226
DIAMETER:	.308"

#3031 SP
Ballistic Coefficient — .338
C.O.L. — 2.790"



#3033 BTSP
Ballistic Coefficient — .349
C.O.L. — 2.796"



#3035 RN
Ballistic Coefficient — .186
C.O.L. — 2.560"



#3037 FMJ-BT
Ballistic Coefficient — .398
C.O.L. — 2.818"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031		35.4 gr.	37.7 gr.	40.0 gr.	42.2 gr.	44.5 gr.
IMR 4064	35.5 gr.	37.6 gr.	39.7 gr.	41.8 gr.	44.0 gr.	46.1 gr.
H4895	36.3 gr.	38.4 gr.	40.5 gr.	42.6 gr.	44.6 gr.	46.7 gr.
IMR 4320		38.6 gr.	40.8 gr.	43.1 gr.	45.4 gr.	47.6 gr.
IMR 4350		44.8 gr.	46.8 gr.	48.8 gr.	50.8 gr.	52.8 gr.

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II



Indicates maximum load • use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP

Ballistic Coefficient — .387
C.O.L. — 2.910"



#3045 BTSP

Ballistic Coefficient — .435
C.O.L. — 2.910"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	32.4 gr.	34.9 gr.	37.4 gr.	39.9 gr.	42.4 gr.	
IMR 4064	33.7 gr.	36.1 gr.	38.5 gr.	40.8 gr.	43.2 gr.	
H4895	34.5 gr.	36.7 gr.	38.9 gr.	41.1 gr.	43.3 gr.	45.5 gr.
IMR 4320	35.8 gr.	38.0 gr.	40.2 gr.	42.4 gr.	44.6 gr.	46.8 gr.
IMR 4350		41.4 gr.	43.9 gr.	46.4 gr.	49.9 gr.	51.4 gr.

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match

Ballistic Coefficient — .450
C.O.L. — 3.025"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	33.7 gr.	35.9 gr.	38.2 gr.	40.4 gr.	42.7 gr.
IMR 4064	35.5 gr.	37.5 gr.	39.5 gr.	41.5 gr.	43.6 gr.
H4895	36.0 gr.	38.3 gr.	40.6 gr.	42.8 gr.	45.1 gr.
IMR 4320	37.0 gr.	39.3 gr.	41.6 gr.	43.9 gr.	46.2 gr.
IMR 4350	38.6 gr.	41.3 gr.	43.9 gr.	46.6 gr.	49.2 gr.

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II

Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP
Ballistic Coefficient — .425
C.O.L. — 2.900"



#3072 BTSP
Ballistic Coefficient — .452
C.O.L. — 2.900"



#3075 RN
Ballistic Coefficient — .241
C.O.L. — 2.865"

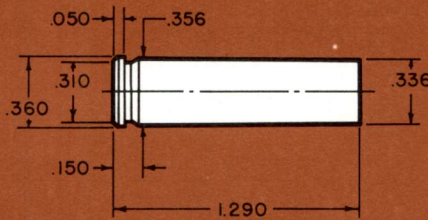


POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	33.5 gr.	35.6 gr.	37.7 gr.	39.8 gr.	
IMR 4064	34.7 gr.	37.0 gr.	39.3 gr.	41.5 gr.	
H4895	34.8 gr.	37.1 gr.	39.4 gr.	41.6 gr.	
IMR 4320	35.7 gr.	37.8 gr.	39.9 gr.	42.0 gr.	
IMR 4350	38.1 gr.	40.5 gr.	42.8 gr.	45.1 gr.	47.5 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II



Indicates maximum load • use with caution



30 M1 CARBINE

RIFLE: 30 CALIBER M1 CARBINE
BARREL: 17 $\frac{1}{2}$ ", 1 in 16" TWIST
CASE: FRONTIER
PRIMER: FEDERAL 200

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 1.680"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

The 30 Carbine had its origin in 1940 when the U.S. Ordnance Department adopted the round as a replacement for the 45 caliber semi-auto sidearm. In 1963 thousands of 30 M1 Carbines were released by the U.S. Government through the National Rifle Association. The price was right, and surplus ammo was inexpensive and readily available. More than anything the original cost of the firearm and ammunition for this caliber has kept it alive and well. Then too, the populace has long had a romance for the 30 Carbine; in fact, many 22 rimfire copies are available to the shooting public today. The 30 M1 Carbine is not a highly accurate or deadly round. Its primary use is as a defense weapon and as a hunting round it should be limited to plinking and small game.

Reloading for the 30 M1 Carbine is easy and economical. The Hornady 100 grain Short Jacket and the 110 grain Round Nose give good accuracy and optimum expansion at 30 Carbine velocities.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .151
DIAMETER: .308"

#3005 SJ
Ballistic Coefficient — .152
C.O.L. — 1.680"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
AA #9	11.2 gr.	11.9 gr.	12.7 gr.		
2400	11.4 gr.	12.3 gr.	13.2 gr.	14.1 gr.	
H110	13.5 gr.	14.3 gr.	15.0 gr.	15.7 gr.	16.5 gr.
IMR 4227	13.3 gr.	14.1 gr.	15.0 gr.	15.8 gr.	
WIN 296	14.1 gr.	14.8 gr.	15.5 gr.	16.2 gr.	16.9 gr.
680	15.4 gr.	16.3 gr.	17.1 gr.	18.0 gr.	

See Ballistics Tables on pages 123-124, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3015 RN
Ballistic Coefficient — .150
C.O.L. — 1.680"



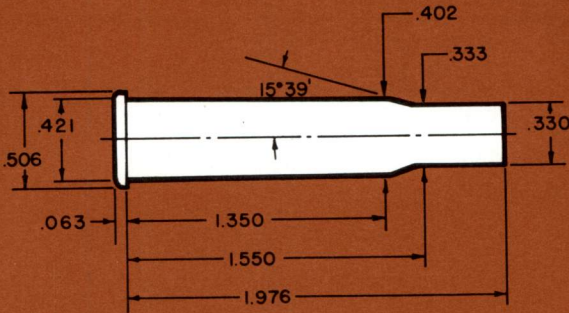
#3017 FMJ-RN
Ballistic Coefficient — .178
C.O.L. — 1.680"



POWDER	VELOCITY			
	1700 fps	1800 fps	1900 fps	2000 fps
AA #9	10.7 gr.	11.4 gr.	12.1 gr.	
2400	10.9 gr.	11.5 gr.	12.2 gr.	
WIN 296		13.0 gr.	14.0 gr.	14.9 gr.
H110		13.1 gr.	14.0 gr.	14.9 gr.
AA 1680	16.1 gr.	17.5 gr.		

See Ballistics Tables on pages 127-128, 128-129, Vol. II

 Indicates maximum load • use with caution



30-30 WINCHESTER

RIFLE: WINCHESTER 94
BARREL: 20", 1 in 12" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.550"
MAX. CASE LENGTH: 2.039"
CASE TRIM LENGTH: 2.019"

The 30-30 is one of America's favorite deer calibers and has been since 1895 when it was first introduced by Winchester. The reason is simple. It has always been chambered in a fast handling, dependable, and moderately priced firearm with adequate knock down power. For the deer hunter who hunts areas where 100-150 yards are the longest shots, the 30-30 is more than sufficient.

The 30-30 is largely found in carbine type firearms with lever actions like the Winchester Model 94 and the Marlin Model 336 heading the list. It can also be found in a few bolt actions and is quite popular in Europe where it is found mainly in combination guns.

Hornady supplies three bullets that are designed expressly for the 30-30 and its velocities: the 170 grain Flat Point, the 150 grain Round Nose, and the 110 grain Round Nose. All bullets designed for the 30-30 have blunt, soft noses. Spire Points or Full Metal Jacketed bullets should not be fired in rifles with tubular magazines as recoil could detonate the remaining rounds in the magazine.

When reloading for lever actions, reloading dies should be set to full-length resize. Lever actions do not have the camming action of a bolt action to close on an over sized case and therefore require the cases to be sized to a greater degree for proper functioning.

In our test rifle, Winchester 748 gave the best results in accuracy and uniformity.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .151
DIAMETER: .308"

#3005 SJ**Ballistic Coefficient — .152****C.O.L. — 2.435"**

POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	31.0 gr.	32.1 gr.	33.1 gr.	34.2 gr.	35.3 gr.	
H322	30.4 gr.	31.7 gr.	33.1 gr.	34.4 gr.		
AA 2230		30.0 gr.	32.3 gr.	34.8 gr.		
BL-C2	33.3 gr.	34.4 gr.	35.5 gr.	36.6 gr.	37.7 gr.	38.8 gr.
RL-12	35.5 gr.	36.8 gr.	38.1 gr.	39.4 gr.	40.7 gr.	
H335	35.5 gr.	36.8 gr.	38.1 gr.	39.5 gr.	40.8 gr.	

See Ballistics Tables on pages 123-124, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3015 RN**Ballistic Coefficient — .150****C.O.L. — 2.490"**

POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
RL-12	25.9 gr.	28.6 gr.	31.4 gr.		
H322	30.9 gr.	32.1 gr.	33.2 gr.	34.4 gr.	
AA 2230	29.3 gr.	31.3 gr.	33.3 gr.		
BL-C2	32.7 gr.	33.8 gr.	35.0 gr.	36.1 gr.	37.3 gr.
IMR 4064	33.0 gr.	34.1 gr.	35.2 gr.	36.4 gr.	
H335	34.1 gr.	36.0 gr.	37.9 gr.		

See Ballistics Tables on pages 127-128, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3035 RN

Ballistic Coefficient — .186
C.O.L. — 2.550"



POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
SCOT 3032	26.4 gr.	28.0 gr.	29.7 gr.	31.3 gr.	
IMR 3031	26.6 gr.	28.2 gr.	29.8 gr.	31.4 gr.	
AA 2520	26.9 gr.	28.7 gr.	30.5 gr.	32.3 gr.	
H335	27.4 gr.	29.3 gr.	31.2 gr.	33.1 gr.	35.0 gr.
RL-12	27.3 gr.	29.3 gr.	31.3 gr.	33.3 gr.	
IMR 4064	29.3 gr.	30.8 gr.	32.3 gr.		
BL-C2	30.4 gr.	32.1 gr.	33.7 gr.	35.3 gr.	36.9 gr.
SCOT 4065	31.0 gr.	32.4 gr.	33.8 gr.	35.2 gr.	
WIN 748	32.0 gr.	33.7 gr.	35.4 gr.	37.1 gr.	38.9 gr.

See Ballistics Tables on pages 137-139, Vol. II

170 GRAIN BULLETS:

SECTIONAL DENSITY: .256
DIAMETER: .308"

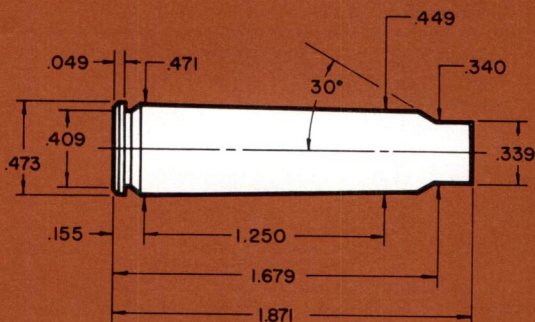
#3060 FP

Ballistic Coefficient — .189
C.O.L. — 2.530"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	23.9 gr.	25.4 gr.	27.0 gr.	28.5 gr.	
SCOT 3032	24.4 gr.	26.4 gr.	28.4 gr.	30.4 gr.	
AA 2520	25.3 gr.	27.2 gr.	29.1 gr.	31.0 gr.	
IMR 4064	25.4 gr.	27.7 gr.	30.0 gr.		
RL-12	26.7 gr.	28.5 gr.	30.4 gr.	32.3 gr.	
H335		29.3 gr.	30.9 gr.	32.4 gr.	34.0 gr.
BL-C2		30.2 gr.	32.0 gr.	33.8 gr.	35.6 gr.
SCOT 4065	29.2 gr.	30.6 gr.	32.0 gr.		
WIN 748		31.4 gr.	33.1 gr.	34.8 gr.	36.5 gr.

See Ballistics Tables on pages 148-150, Vol. II



300 SAVAGE

RIFLE: SAVAGE MODEL 99
BARREL: 24", 1 in 12" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.600"
MAX. CASE LENGTH: 1.871"
CASE TRIM LENGTH: 1.861"

The 300 Savage offers hunting performance much superior to that of the 30-30 Winchester, and though it never achieved the 30-30's popularity it has been a widely used big game cartridge, ample for all but the largest North American species. The rifle in which it was introduced in 1921 — the Model 99 Savage lever action — has been the most popular of all the rifles chambered for it, although it was produced in pumps, semi-automatics, and bolt actions.

The 300 Savage was first loaded to equal the power of original military 30-06 loadings with the 150 grain bullets. Lever actions and the capacity of the case have kept it from equaling the handloading potential of the 30-06 or the more recent 308 Winchester cartridge. The 308 indeed has superseded in popularity the 300 Savage because of its greater power availability and today is generally chambered in place of the Savage Arms Company development.

A very wide selection of 30 caliber Hornady Bullets may be hand-loaded in the 300 Savage case, with 150 and 165 grain weights among the most popular. Unlike lever actions with tubular magazines, the Model 99 Savage has a rotary magazine which will accommodate the ballistically more efficient Spire Points. Bullets over 180 grains offer little to most hunters using the 300 Savage as velocities are low and expansion is questionable. IMR 4064 is an outstanding powder for loading nearly all bullet weights, with IMR 3031 and H4895 nearly equaling its versatility.

110 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.166
.308"

#3010 SP

Ballistic Coefficient — .256
C.O.L. — 2.450"



#3015 RN

Ballistic Coefficient — .150
C.O.L. — 2.450"



#3017 FMJ

Ballistic Coefficient — .178
C.O.L. — 2.450"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4198	31.3 gr.	32.8 gr.	34.4 gr.	35.9 gr.	37.4 gr.	
IMR 3031	36.6 gr.	37.9 gr.	39.1 gr.	40.4 gr.	41.7 gr.	43.0 gr.
BL-C2	38.8 gr.	40.4 gr.	41.9 gr.	43.5 gr.		
H4895	39.7 gr.	41.0 gr.	42.3 gr.	43.6 gr.	44.9 gr.	
IMR 4064	39.8 gr.	41.1 gr.	42.4 gr.	43.7 gr.		
IMR 4320	40.3 gr.	41.7 gr.	43.1 gr.	44.6 gr.	46.0 gr.	47.4 gr.
H380	42.6 gr.	44.3 gr.	46.1 gr.			

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II

300 SAVAGE

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 2.520"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H4198	31.7 gr.	33.0 gr.	34.4 gr.	35.7 gr.	37.1 gr.	
IMR 3031	36.2 gr.	37.6 gr.	38.9 gr.	40.3 gr.	41.7 gr.	43.0 gr.
H4895	38.0 gr.	39.6 gr.	41.1 gr.	42.6 gr.	44.1 gr.	
BL-C2	37.6 gr.	39.4 gr.	41.2 gr.	43.0 gr.		
IMR 4064	38.4 gr.	40.0 gr.	41.5 gr.	43.1 gr.	44.7 gr.	
IMR 4320	39.3 gr.	41.0 gr.	42.7 gr.	44.5 gr.	46.2 gr.	
H380	41.5 gr.	43.4 gr.	45.3 gr.	47.2 gr.		

See Ballistics Tables on pages 129-132, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 2.680"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 2.686"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 2.450"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 2.707"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	34.1 gr.	35.7 gr.	37.2 gr.	38.7 gr.	40.2 gr.	
BL-C2	33.8 gr.	35.9 gr.	38.0 gr.	40.1 gr.		
H4895	36.1 gr.	37.7 gr.	39.3 gr.	40.9 gr.		
IMR 4064	36.5 gr.	38.0 gr.	39.5 gr.	41.0 gr.	42.5 gr.	44.0 gr.
IMR 4320	36.5 gr.	38.3 gr.	40.2 gr.	42.0 gr.		
H380	39.1 gr.	41.0 gr.	42.8 gr.	44.7 gr.		
IMR 4350	43.0 gr.	44.6 gr.				

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

300 SAVAGE

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 2.600"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 2.600"



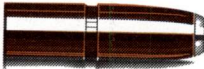
POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	31.5 gr.	33.1 gr.	34.7 gr.	36.3 gr.	37.8 gr.	39.4 gr.
BL-C2		32.4 gr.	34.9 gr.	37.5 gr.		
H4895	33.8 gr.	35.3 gr.	36.8 gr.	38.3 gr.	39.8 gr.	41.3 gr.
IMR 4064	33.9 gr.	35.4 gr.	36.9 gr.	38.4 gr.	39.9 gr.	41.4 gr.
IMR 4320	34.4 gr.	36.0 gr.	37.7 gr.	39.2 gr.	40.8 gr.	42.4 gr.
H380	34.6 gr.	36.8 gr.	39.0 gr.	41.2 gr.	43.4 gr.	
IMR 4350	39.9 gr.	41.5 gr.	43.1 gr.	44.7 gr.		

See Ballistics Tables on pages 141-143, 144-146, 241-242, Vol. II

170 GRAIN BULLETS:

SECTIONAL DENSITY: .256
DIAMETER: .308"

#3060 FP
Ballistic Coefficient — .189
C.O.L. — 2.420"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	30.0 gr.	31.7 gr.	33.3 gr.	35.0 gr.	36.6 gr.	38.3 gr.
H4895	32.2 gr.	33.9 gr.	35.5 gr.	37.2 gr.	38.8 gr.	40.4 gr.
IMR 4064	33.1 gr.	34.6 gr.	36.1 gr.	37.6 gr.	39.1 gr.	40.6 gr.
BL-C2		35.1 gr.	36.5 gr.	37.9 gr.	39.3 gr.	
IMR 4320	33.2 gr.	34.9 gr.	36.7 gr.	38.5 gr.	40.2 gr.	42.0 gr.
H380	33.8 gr.	36.3 gr.	38.8 gr.	41.2 gr.	43.7 gr.	
IMR 4350	40.2 gr.	42.5 gr.	42.9 gr.	44.2 gr.		

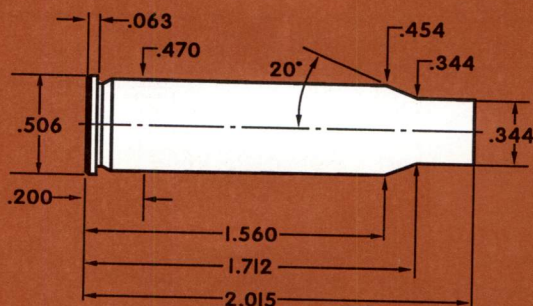
See Ballistics Tables on pages 148-150, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.271**
.308"**#3070 SP****Ballistic Coefficient — .425**
C.O.L. — 2.600"**#3072 BTSP****Ballistic Coefficient — .452**
C.O.L. — 2.600"**#3075 RN****Ballistic Coefficient — .241**
C.O.L. — 2.565"**300 SAVAGE**

POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	28.3 gr.	30.1 gr.	31.9 gr.	33.7 gr.	35.5 gr.	37.3 gr.
H4895	30.2 gr.	32.1 gr.	34.0 gr.	35.9 gr.	37.8 gr.	39.7 gr.
IMR 4064	30.3 gr.	32.2 gr.	34.1 gr.	36.0 gr.	37.9 gr.	39.8 gr.
BL-C2			34.8 gr.	36.5 gr.	38.3 gr.	
IMR 4320	31.4 gr.	33.1 gr.	34.9 gr.	36.7 gr.	38.4 gr.	40.2 gr.
H380	32.3 gr.	34.5 gr.	36.7 gr.	38.9 gr.	41.1 gr.	
IMR 4350	36.9 gr.	38.6 gr.	40.3 gr.	42.0 gr.	43.7 gr.	45.4 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, Vol. II **Indicates maximum load • use with caution**



307 WINCHESTER

RIFLE: USRAC MODEL 94 AE XTR
BARREL: 20", 1 in 12" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.528"
MAX. CASE LENGTH: 2.015"
CASE TRIM LENGTH: 2.005"

In 1982, U.S. Repeating Arms Company, the successors to Winchester, introduced two new calibers for the beefed up M94 Angle Eject rifle. This new reinforced rifle was designed to handle the relatively high pressure of the 375 Winchester (52,000 C.U.P.). It was appropriate to use this rifle for the new 307 Winchester. The 307 is externally similar to the 308 Winchester, except the 307 is rimmed. 308 dies and a #33 shell holder (although sometimes a #2 shell holder for 30-30 type cases will work) can be used to reload the 307. Because of thicker case walls, however, the 307 has a smaller internal capacity and accordingly, 308 Winchester data can not be used for the 307. As with all tubular magazine fed rifles, only round nose or flat point bullets should be used and should be crimped in place when possible to prevent bullets from being pushed deeper during recoil.

The 307 Winchester provides a considerable improvement over the 30-30 Winchester, offering flatter trajectory and greater knockdown power. The test rifle exhibited very good accuracy for lever actions with 1½" to 2" groups being common. WIN 748 and IMR 4064 powders and the Hornady 170 grain flat point bullet provided excellent results with moderate recoil. USRAC has produced an accurate, potent hunting rifle and cartridge. Only time will tell if it is accepted by American hunters.

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3035 RN

Ballistic Coefficient — .186
C.O.L. — 2.528"



POWDER	VELOCITY			
	2300 fps	2400 fps	2500 fps	2600 fps
AA 2460		36.6 gr.	38.3 gr.	40.0 gr.
IMR 4064	38.3 gr.	39.7 gr.	41.1 gr.	
WIN 748		41.1 gr.	42.3 gr.	43.5 gr.
H414	45.6 gr.	48.8 gr.		

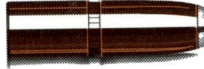
See Ballistics Tables on pages 137-139, Vol. II

170 GRAIN BULLETS:

SECTIONAL DENSITY: .256
DIAMETER: .308"

#3060 FP

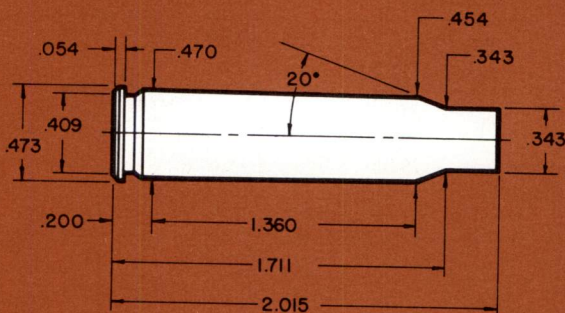
Ballistic Coefficient — .189
C.O.L. — 2.518"



POWDER	VELOCITY			
	2200 fps	2300 fps	2400 fps	2500 fps
AA 2460	34.1 gr.	35.8 gr.	37.4 gr.	39.0 gr.
IMR 4064	36.9 gr.	38.4 gr.	39.8 gr.	41.2 gr.
WIN 748	38.9 gr.	40.1 gr.	41.3 gr.	
H414	43.9 gr.	46.3 gr.		

See Ballistics Tables on pages 148-150, Vol. II

Indicates maximum load • use with caution



308 WINCHESTER

RIFLE: WINCHESTER 70
BARREL: 22", 1 in 12" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.875"
MAX. CASE LENGTH: 2.015"
CASE TRIM LENGTH: 2.005"

Accurate, versatile, efficient, and popular is the easiest and best way to describe the 308 Winchester. The 308 has been chambered in every feasible action and provides exceptional performance for everything from bench rest shooting to big game.

The 308 was originally designated the 7.62mm NATO. It was developed as the standard small arms service cartridge for nations that were members of the North Atlantic Treaty Organization. More recently, NATO switched to the 5.56mm cartridge, commonly known as the .223 Remington.

In the beginning the 308 did not have the sporting appeal of the 30-06 — anything the 308 could do the 30-06 could do a little better. However, when the sporting public realized the accuracy inherent to the cartridge and the numerous medium-size actions in which it could be chambered, the popularity steadily grew. The 308 is also the most popular national match course cartridge in use today, and with the wide range of Hornady 30 caliber bullets, it makes an excellent all around North American big game cartridge.

The 308, as a rule, is not finicky as to the type of powder that works well in it — another reason for its popularity. In our test rifle, all powders listed, gave more than acceptable results, with IMR 4064 and Winchester 748 providing the best results throughout the range of bullets.

For most powders the data for the 190 grain Boat Tail Hollow Point shows a greater maximum powder charge than for the 180 grain Spire Point. The reason for this phenomenon is related to the construction of the two bullets. The 180 grain Spire Point has a longer bearing surface and consequently reaches maximum pressures sooner.

110 GRAIN BULLETS:

SECTIONAL DENSITY:	.166
DIAMETER:	.308"

#3010 SP

Ballistic Coefficient — .256
C.O.L. — 2.690"

**#3015 RN**

Ballistic Coefficient — .150
C.O.L. — 2.515"

**#3017 FMJ**

Ballistic Coefficient — .178
C.O.L. — 2.515"



POWDER	VELOCITY			
	2900 fps	3000 fps	3100 fps	3200 fps
AA 2460	42.2 gr.	44.0 gr.	45.8 gr.	
H322	42.8 gr.	44.3 gr.	45.8 gr.	47.2 gr.
AA 2230	42.8 gr.	44.5 gr.	46.2 gr.	
IMR 3031	43.2 gr.	44.6 gr.	46.0 gr.	
IMR 4895	44.1 gr.	45.4 gr.	46.7 gr.	48.0 gr.
H4895	44.4 gr.	45.7 gr.	47.1 gr.	48.4 gr.
IMR 4064	45.4 gr.	47.1 gr.	48.8 gr.	
WIN 748	49.9 gr.	51.6 gr.	53.2 gr.	

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY:	.196
DIAMETER:	.308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 2.690"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H322	39.8 gr.	41.8 gr.	43.8 gr.		
IMR 3031	40.4 gr.	42.2 gr.	43.9 gr.		
AA 2460	40.5 gr.	42.3 gr.	44.0 gr.		
IMR 4895	40.8 gr.	42.6 gr.	44.4 gr.	46.2 gr.	
AA 2230	40.7 gr.	42.6 gr.	44.5 gr.		
H4895	41.9 gr.	43.3 gr.	44.8 gr.		
IMR 4064	42.7 gr.	44.2 gr.	45.7 gr.	47.3 gr.	
WIN 748	45.5 gr.	47.6 gr.	49.7 gr.	51.7 gr.	53.8 gr.

See Ballistics Tables on pages 129-132, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 2.750"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 2.756"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 2.520"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 2.777"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	36.3 gr.	37.9 gr.	39.6 gr.	41.2 gr.	
H322	36.6 gr.	38.2 gr.	39.8 gr.	41.4 gr.	
AA 2230	36.3 gr.	38.2 gr.	40.0 gr.	41.8 gr.	
AA 2460		38.3 gr.	40.1 gr.	41.9 gr.	42.8 gr.
IMR 4895	38.5 gr.	39.9 gr.	41.3 gr.	42.7 gr.	
H4895	38.7 gr.	40.2 gr.	41.8 gr.		
IMR 4064	39.7 gr.	41.0 gr.	42.3 gr.	43.6 gr.	44.9 gr.
WIN 748	41.8 gr.	43.4 gr.	45.1 gr.	46.7 gr.	48.4 gr.
H414	45.9 gr.	47.7 gr.	49.5 gr.		

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, 406-410, Vol. II

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 2.750"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 2.750"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
AA 2230	35.2 gr.	37.0 gr.	38.7 gr.	40.5 gr.	
H322	35.5 gr.	37.1 gr.	38.6 gr.		
AA 2460	35.8 gr.	37.4 gr.	39.0 gr.		
IMR 4895	36.1 gr.	37.5 gr.	39.0 gr.	40.4 gr.	
IMR 3031	36.1 gr.	37.6 gr.	39.1 gr.	40.6 gr.	
RL-15	37.6 gr.	39.1 gr.	40.6 gr.	42.2 gr.	
IMR 4064	38.5 gr.	39.8 gr.	41.0 gr.	42.3 gr.	43.5 gr.
WIN 748	39.8 gr.	41.3 gr.	42.8 gr.	44.3 gr.	45.8 gr.
H414	43.8 gr.	45.7 gr.	47.6 gr.		
WIN 760	43.8 gr.	45.9 gr.	48.1 gr.	50.3 gr.	

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, 410-412, Vol. II



Indicates maximum load • use with caution

168 GRAIN BULLETS:**SECTIONAL DENSITY:****.253****DIAMETER:****.308"****#3050 BTHP National Match****Ballistic Coefficient — .450****C.O.L. — 2.800"**

POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H322	35.8 gr.	37.2 gr.	38.6 gr.		
AA 2230		36.8 gr.	38.6 gr.	40.4 gr.	
IMR 3031	36.1 gr.	37.5 gr.	38.8 gr.	40.2 gr.	
IMR 4895	36.7 gr.	38.1 gr.	39.5 gr.		
H4895	37.5 gr.	38.9 gr.	40.3 gr.		
RL-15	37.5 gr.	38.9 gr.	40.4 gr.	41.9 gr.	
IMR 4064	38.1 gr.	39.5 gr.	40.8 gr.	42.2 gr.	
WIN 748	40.2 gr.	41.6 gr.	43.0 gr.	44.4 gr.	45.8 gr.
H414	42.9 gr.	44.7 gr.	46.6 gr.	48.4 gr.	
WIN 760	43.3 gr.	45.1 gr.	46.8 gr.	48.5 gr.	50.3 gr.

See Ballistics Tables on pages 146-148, 242-243, 267-269, 412, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY:	.271
DIAMETER:	.308"

#3070 SP

Ballistic Coefficient — .425
C.O.L. — 2.765"



#3072 BTSP

Ballistic Coefficient — .452
C.O.L. — 2.765"



#3075 RN

Ballistic Coefficient — .241
C.O.L. — 2.730"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4895	35.0 gr.	36.2 gr.	37.5 gr.		
IMR 3031	35.3 gr.	36.8 gr.	38.3 gr.	39.8 gr.	
AA 2520		37.3 gr.	39.8 gr.	42.3 gr.	
RL-15	36.8 gr.	37.8 gr.	39.6 gr.	41.5 gr.	
IMR 4064	37.1 gr.	38.6 gr.	40.1 gr.	41.6 gr.	
H4895	38.0 gr.	38.9 gr.			
WIN 748	38.4 gr.	39.9 gr.	41.4 gr.	42.8 gr.	
H414	42.5 gr.	43.4 gr.	45.3 gr.	47.1 gr.	
WIN 760	42.0 gr.	43.6 gr.	45.2 gr.	46.8 gr.	48.4 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

 Indicates maximum load • use with caution

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP MATCH
Ballistic Coefficient — .530
C.O.L. — 2.875"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 2.875"

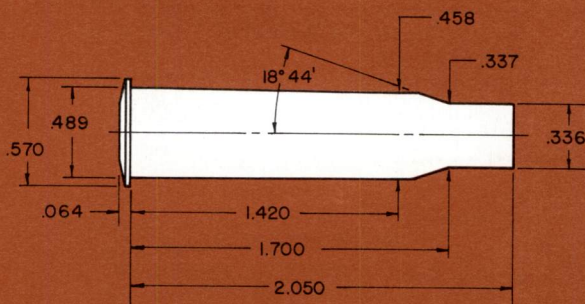


POWDER	VELOCITY			
	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	35.7 gr.	37.0 gr.	38.4 gr.	
AA 2520	35.4 gr.	37.6 gr.	39.8 gr.	
RL-15	35.8 gr.	37.9 gr.	40.0 gr.	
H4895	36.8 gr.	38.2 gr.		
IMR 4064	36.6 gr.	38.3 gr.	40.0 gr.	41.7 gr.
WIN 748	40.1 gr.	41.3 gr.	42.6 gr.	43.8 gr.
H414	41.3 gr.	43.0 gr.	44.7 gr.	
WIN 760	41.6 gr.	43.6 gr.	45.6 gr.	

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

308 WINCHESTER

 Indicates maximum load • use with caution



7.62mm RUSSIAN

RIFLE: WESTINGHOUSE
BARREL: 31 1/2", 1 in 10" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.105"
MAX. CASE LENGTH: 2.114"
CASE TRIM LENGTH: 2.104"

The 7.62 Russian (or 7.62x54R) is a rimmed, bottlenecked 30 caliber cartridge adopted as the service round of the Czar's Russian army in 1891, maintained as the standard service cartridge by both Czarist and Soviet armies through two world wars, and (with the Model 91 Mosin-Nagant rifles chambered for it) supplied in quantity to member nations of the Communist bloc. During World War I, Remington, Winchester, and New England Westinghouse all produced Mosin-Nagant Model 91's for the Russians. After the Soviet Revolution many of these U.S. manufactured weapons stayed in this country and were sold to the American shooting public. Other Nagant rifles entered the U.S. as captured war surplus following the Korean War. Finland also adopted this cartridge and produced Mosin-Nagant rifles, some of which have been imported into the U.S. Remington produced sporting ammunition for the 7.62 Russian until about 1950: Boxer primed cartridge brass and sporting loads today are available from Norma. Some Mosin-Nagants were improperly converted to fire the .30-06 cartridge. These conversions are extremely dangerous and should not be fired. The rifle is best left in its original caliber. As with all older military rifles, careful inspection by a knowledgeable gunsmith is highly recommended.

The 7.62mm Russian is a cartridge of more than historical interest. Soviet marksmen in international shooting competition have scored some remarkable successes with this cartridge, and big bore competitors from other nations have begun to take interest in the 7.62. For the target shooting fraternity we have therefore included loads for our 168 and 190 grain Boat Tail Hollow Point Match bullets.

This cartridge should not be confused with the 7.62x39 cartridge developed for the SKS rifles and later used in AK-47 type rifles. This 7.62x39 is also sometimes referred to as 7.62 Russian.

7.62mm RUSSIAN

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3010 SP

Ballistic Coefficient — .256
C.O.L. — 2.715"



#3015 RN

Ballistic Coefficient — .150
C.O.L. — 2.530"



#3017 FMJ

Ballistic Coefficient — .178
C.O.L. — 2.530"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		42.0 gr.	44.0 gr.	46.0 gr.	48.0 gr.
H4895		45.2 gr.	47.3 gr.	49.5 gr.	51.7 gr.
H380	44.0 gr.	46.2 gr.	48.3 gr.	50.4 gr.	52.5 gr.
IMR 4320		46.4 gr.	48.4 gr.	50.5 gr.	52.5 gr.
IMR 4064		47.0 gr.	48.5 gr.	50.0 gr.	
WIN 760	52.0 gr.	53.7 gr.	55.3 gr.	57.0 gr.	

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 2.815"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	41.0 gr.	43.1 gr.	45.2 gr.	48.3 gr.	49.4 gr.
H4895	45.0 gr.	46.8 gr.	48.5 gr.	50.3 gr.	
IMR 4064	45.4 gr.	47.2 gr.	48.7 gr.	50.3 gr.	
H380	45.3 gr.	47.3 gr.	49.2 gr.	51.2 gr.	
IMR 4320	45.0 gr.	47.2 gr.	49.3 gr.	51.5 gr.	53.7 gr.
WIN 760	52.5 gr.	54.2 gr.	56.0 gr.		

See Ballistics Tables on pages 129-132, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.226**
.308"**#3031 SP****Ballistic Coefficient — .338**
C.O.L. — 2.825"**#3033 BTSP****Ballistic Coefficient — .349**
C.O.L. — 2.831"**#3035 RN****Ballistic Coefficient — .186**
C.O.L. — 2.595"**#3037 FMJ-BT****Ballistic Coefficient — .398**
C.O.L. — 2.853"

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	38.2 gr.	40.3 gr.	42.3 gr.	44.4 gr.		
H4895	41.3 gr.	43.3 gr.	45.2 gr.	47.2 gr.	49.2 gr.	
IMR 4064	42.5 gr.	44.1 gr.	45.8 gr.	47.4 gr.	49.1 gr.	
IMR 4320	42.7 gr.	44.6 gr.	46.5 gr.	48.4 gr.	50.2 gr.	
H380		44.0 gr.	46.3 gr.	48.6 gr.	51.9 gr.	53.2 gr.
WIN 760	49.0 gr.	50.7 gr.	52.4 gr.	54.1 gr.	55.9 gr.	

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

165 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.248**
.308"**#3040 SP****Ballistic Coefficient — .387**
C.O.L. — 2.810"**#3045 BTSP****Ballistic Coefficient — .435**
C.O.L. — 2.810"

POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	36.7 gr.	38.9 gr.	41.1 gr.	43.3 gr.	
H4895	39.9 gr.	42.0 gr.	44.1 gr.	46.2 gr.	48.3 gr.
IMR 4064	41.6 gr.	43.0 gr.	44.4 gr.	45.8 gr.	
IMR 4320	41.4 gr.	43.3 gr.	45.1 gr.	47.0 gr.	48.8 gr.
H380	41.5 gr.	43.5 gr.	45.6 gr.	47.6 gr.	49.6 gr.
WIN 760	47.2 gr.	49.0 gr.	50.7 gr.	52.5 gr.	54.2 gr.

*See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II***168 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.253**
.308"**#3050 BTHP National Match****Ballistic Coefficient — .450**
C.O.L. — 2.975"

POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	38.3 gr.	40.5 gr.	42.7 gr.	45.9 gr.	
H4895	41.0 gr.	43.3 gr.	45.5 gr.	47.8 gr.	
IMR 4064	41.4 gr.	43.4 gr.	45.5 gr.	47.5 gr.	
IMR 4320	42.0 gr.	43.8 gr.	45.6 gr.	47.5 gr.	
H380	41.6 gr.	43.6 gr.	45.7 gr.	47.8 gr.	49.8 gr.
WIN 760	47.7 gr.	49.4 gr.	51.1 gr.	52.8 gr.	54.5 gr.

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP
Ballistic Coefficient — .425
C.O.L. — 3.010"



#3072 BTSP
Ballistic Coefficient — .452
C.O.L. — 3.010"



#3075 RN
Ballistic Coefficient — .241
C.O.L. — 2.975"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	38.6 gr.	40.7 gr.	42.7 gr.	44.8 gr.	
H4895	40.8 gr.	42.8 gr.	44.9 gr.	47.0 gr.	
IMR 4064	41.5 gr.	43.5 gr.	45.4 gr.	47.3 gr.	
IMR 4320	41.4 gr.	43.6 gr.	45.7 gr.	47.8 gr.	50.0 gr.
H380	42.0 gr.	44.2 gr.	46.8 gr.	49.1 gr.	51.5 gr.
IMR 4350	47.2 gr.	49.3 gr.	51.5 gr.		
WIN 760	48.3 gr.	50.1 gr.	51.9 gr.	53.7 gr.	55.5 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.105"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.105"



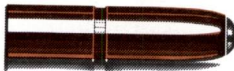
POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	37.5 gr.	39.4 gr.	41.4 gr.	43.3 gr.	
IMR 4064	38.5 gr.	40.5 gr.	42.5 gr.	44.5 gr.	
H380	38.6 gr.	40.8 gr.	43.0 gr.	45.2 gr.	47.4 gr.
IMR 4320	39.2 gr.	41.3 gr.	43.5 gr.	45.6 gr.	47.7 gr.
WIN 760	44.7 gr.	46.4 gr.	48.1 gr.	49.8 gr.	51.5 gr.
IMR 4350	44.0 gr.	46.4 gr.	48.8 gr.	51.2 gr.	

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.055"

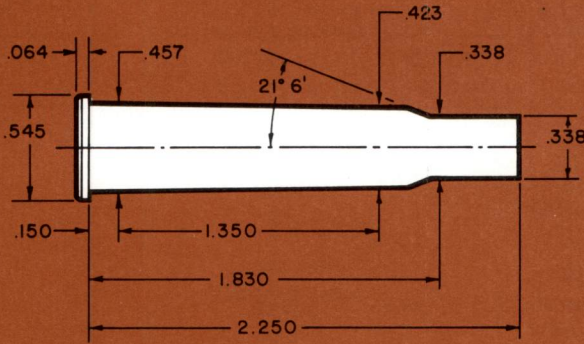


POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
H4895	37.7 gr.	39.7 gr.	41.7 gr.	43.7 gr.	
IMR 4064	37.9 gr.	40.2 gr.	42.5 gr.	44.8 gr.	
IMR 4320	38.6 gr.	40.8 gr.	43.0 gr.	45.2 gr.	
H380		41.7 gr.	44.0 gr.	46.3 gr.	48.6 gr.
WIN 760		46.4 gr.	48.2 gr.	50.0 gr.	51.9 gr.

See Ballistics Tables on page 160-161, Vol. II



Indicates maximum load • use with caution



30-40 Krag

RIFLE: SPRINGFIELD MODEL 1898
BARREL: 30", 1 in 10" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.175"
MAX. CASE LENGTH: 2.314"
CASE TRIM LENGTH: 2.304"

The 30-40 Krag entered U.S. Military service in 1892 in the first smokeless powder repeater adopted by the U.S. Army, the Model 1892 Krag. This rifle was a somewhat improved version of the Danish Krag-Jorgensen Model 1889, and later was modified into U.S. Krag Models 1896 and 1898.

Although the 30-40 represented quite an advance over previous U.S. service cartridges, it was never adopted by the Navy or Marine Corps and was superseded in 1903 by the 30-03 cartridge which became the vastly superior 30-06 so familiar to shooters today.

The Krag action is exceptionally smooth, though its strength is limited. As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended. The Model 1895 Winchester lever action, which was discontinued in 1936, can withstand somewhat higher pressures. Ruger produced its Number 3 single shot rifle and Browning made an excellent replica of the Model 1895, both in .30-40 Krag and both of which are useful and accurate hunting rifles. Loaded to 2100 fps with the 220 grain Hornady Round Nose, the 30-40 is certainly adequate for large species of North American game.

Many later military and commercial developments have displaced the 30-40 from its former position of popularity, but it is still a commonly used and effective cartridge.

110 GRAIN BULLETS:

SECTIONAL DENSITY:

.166

DIAMETER:

.308"

#3010 SP

Ballistic Coefficient — .256

C.O.L. — 2.880"



#3015 RN

Ballistic Coefficient — .150

C.O.L. — 2.715"



#3017 FMJ

Ballistic Coefficient — .178

C.O.L. — 2.715"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	37.6 gr.	38.7 gr.	39.9 gr.	41.0 gr.	42.1 gr.	43.2 gr.
IMR 4320		41.3 gr.	42.9 gr.	44.5 gr.	46.0 gr.	47.7 gr.
IMR 4064	41.4 gr.	42.7 gr.	43.9 gr.	45.2 gr.	46.5 gr.	47.8 gr.
H4895	40.4 gr.	42.1 gr.	43.7 gr.	45.4 gr.	47.1 gr.	48.7 gr.
H380	40.5 gr.	42.3 gr.	44.1 gr.	45.9 gr.	47.7 gr.	
IMR 4350	48.1 gr.	49.5 gr.	50.8 gr.			

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY:

.196

DIAMETER:

.308"

#3020 SP

Ballistic Coefficient — .295

C.O.L. — 2.975"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031			37.9 gr.	39.5 gr.	41.1 gr.	42.7 gr.
IMR 4064	38.7 gr.	40.2 gr.	41.6 gr.	43.0 gr.	44.5 gr.	45.9 gr.
H4895	38.2 gr.	39.9 gr.	41.5 gr.	43.2 gr.	44.8 gr.	46.5 gr.
IMR 4320	38.1 gr.	39.9 gr.	41.6 gr.	43.4 gr.	45.2 gr.	46.9 gr.
H380		41.9 gr.	43.0 gr.	44.9 gr.	46.8 gr.	
IMR 4350	45.8 gr.	47.3 gr.	48.8 gr.	50.4 gr.		

See Ballistics Tables on pages 129-132, Vol. II

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 3.135"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 3.141"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 2.905"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 3.163"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	34.0 gr.	35.2 gr.	36.4 gr.	37.7 gr.	38.9 gr.	40.1 gr.
H4895		37.4 gr.	39.1 gr.	40.8 gr.	42.4 gr.	44.1 gr.
IMR 4064		37.8 gr.	39.5 gr.	41.2 gr.	42.9 gr.	44.5 gr.
IMR 4320	36.3 gr.	38.0 gr.	39.6 gr.	41.3 gr.	43.0 gr.	44.7 gr.
H380	38.0 gr.	39.7 gr.	41.3 gr.	43.0 gr.	44.6 gr.	
IMR 4350	41.7 gr.	43.4 gr.	45.1 gr.	46.8 gr.	48.5 gr.	50.2 gr.

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 3.105"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 3.105"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	31.6 gr.	32.9 gr.	34.3 gr.	35.7 gr.	37.0 gr.	38.4 gr.
IMR 4320				38.5 gr.	40.2 gr.	41.9 gr.
H4895	33.5 gr.	35.2 gr.	36.9 gr.	38.7 gr.	40.4 gr.	
IMR 4064	34.3 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.5 gr.	42.0 gr.
H380			38.0 gr.	39.8 gr.	41.6 gr.	43.4 gr.
IMR 4350	39.8 gr.	41.3 gr.	42.8 gr.	44.3 gr.	45.8 gr.	47.3 gr.
H4831			44.8 gr.	47.0 gr.	49.1 gr.	

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II



Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP

Ballistic Coefficient — .425
C.O.L. — 3.175"



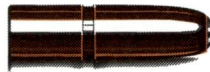
#3072 BTSP

Ballistic Coefficient — .452
C.O.L. — 3.175"



#3075 RN

Ballistic Coefficient — .241
C.O.L. — 3.140"



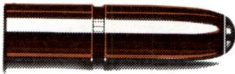
POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	30.6 gr.	32.1 gr.	33.6 gr.	35.0 gr.	36.5 gr.	38.0 gr.
H4895	31.8 gr.	33.5 gr.	35.1 gr.	36.7 gr.	38.3 gr.	40.0 gr.
IMR 4320		33.6 gr.	35.2 gr.	36.9 gr.	38.6 gr.	40.0 gr.
IMR 4064	32.6 gr.	34.2 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.5 gr.
H380	34.9 gr.	36.3 gr.	37.6 gr.	39.0 gr.	40.4 gr.	
IMR 4350	38.9 gr.	40.1 gr.	41.3 gr.	42.6 gr.	43.8 gr.	45.1 gr.
H4831	41.5 gr.	42.9 gr.	44.2 gr.	45.6 gr.	47.0 gr.	

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.080"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
IMR 3031	27.5 gr.	29.2 gr.	31.0 gr.	32.7 gr.		
IMR 4320	29.7 gr.	31.2 gr.	32.7 gr.	34.1 gr.	35.6 gr.	
IMR 4064	29.3 gr.	31.0 gr.	32.7 gr.	34.4 gr.	36.0 gr.	
H4895	30.0 gr.	31.5 gr.	33.1 gr.	34.7 gr.	36.3 gr.	
H380	31.4 gr.	32.9 gr.	34.4 gr.	36.0 gr.		
IMR 4350	34.5 gr.	36.0 gr.	37.5 gr.	39.9 gr.	40.5 gr.	42.0 gr.
H4831	37.0 gr.	38.4 gr.	39.8 gr.	41.1 gr.	42.5 gr.	43.9 gr.

See Ballistics Tables on page 160, Vol. II

 Indicates maximum load • use with caution

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3010 SP
Ballistic Coefficient — .256
C.O.L. — 3.170"



#3015 RN
Ballistic Coefficient — .150
C.O.L. — 3.015"



#3017 FMJ
Ballistic Coefficient — .178
C.O.L. — 3.015"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
AA 2460	48.9 gr.	50.9 gr.	52.9 gr.	55.0 gr.	
IMR 3031	49.3 gr.	51.1 gr.	52.9 gr.	54.7 gr.	56.5 gr.
H4895	49.7 gr.	51.3 gr.	53.0 gr.		
RL-12	51.2 gr.	53.1 gr.	54.9 gr.		
H335	50.3 gr.	52.6 gr.	55.0 gr.	57.3 gr.	
IMR 4320	51.2 gr.	53.7 gr.	56.2 gr.		
IMR 4064	53.0 gr.	54.6 gr.	56.2 gr.	57.8 gr.	
WIN 748	55.0 gr.	56.7 gr.	58.5 gr.	60.2 gr.	62.0 gr.
WIN 760	60.3 gr.	62.5 gr.	64.6 gr.		

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II



Indicates maximum load • use with caution

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 3.170"



POWDER	VELOCITY			
	2900 fps	3000 fps	3100 fps	3200 fps
AA 2460	46.7 gr.	48.6 gr.	50.5 gr.	
IMR 3031	47.0 gr.	48.8 gr.	50.7 gr.	52.5 gr.
H4895	47.2 gr.	49.1 gr.	50.9 gr.	
RL-12	49.0 gr.	50.8 gr.		
IMR 4320	49.7 gr.	51.4 gr.	53.1 gr.	
H335	49.5 gr.	51.5 gr.	53.5 gr.	
IMR 4064	50.6 gr.	52.0 gr.	53.5 gr.	54.9 gr.
WIN 748	50.2 gr.	52.3 gr.	54.4 gr.	56.5 gr.
IMR 4350	56.2 gr.	58.2 gr.	60.1 gr.	
WIN 760	55.7 gr.	58.1 gr.	60.6 gr.	63.0 gr.

See Ballistics Tables on pages 129-132, Vol. II

30-06

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP
Ballistic Coefficient — .338
C.O.L. — 3.230"



#3033 BTSP
Ballistic Coefficient — .349
C.O.L. — 3.236"



#3035 RN
Ballistic Coefficient — .186
C.O.L. — 3.000"



#3037 FMJ-BT
Ballistic Coefficient — .398
C.O.L. — 3.258"



POWDER	VELOCITY			
	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	44.0 gr.	46.2 gr.	48.4 gr.	
H4895	45.1 gr.	46.9 gr.	48.7 gr.	
IMR 4320	46.1 gr.	48.2 gr.	50.2 gr.	
WIN 748	47.0 gr.	49.2 gr.	51.3 gr.	53.4 gr.
IMR 4064	47.4 gr.	49.4 gr.	51.4 gr.	53.4 gr.
WIN 760	52.0 gr.	54.5 gr.	57.0 gr.	
IMR 4350	53.1 gr.	55.2 gr.	57.3 gr.	59.4 gr.
H414	52.6 gr.	55.2 gr.	57.8 gr.	60.4 gr.
H4350	53.8 gr.	55.9 gr.	58.0 gr.	60.2 gr.
IMR 4831	56.9 gr.	58.6 gr.	60.3 gr.	
RL-19	57.7 gr.	59.7 gr.	61.7 gr.	

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

 Indicates maximum load • use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP

Ballistic Coefficient — .387
C.O.L. — 3.230"



#3045 BTSP

Ballistic Coefficient — .435
C.O.L. — 3.230"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
AA 2520	42.0 gr.	44.2 gr.	46.5 gr.	48.7 gr.	
WIN 748		45.4 gr.	47.6 gr.	49.8 gr.	
IMR 4064		46.6 gr.	48.3 gr.	49.9 gr.	
WIN 760			51.7 gr.	54.4 gr.	57.0 gr.
IMR 4350		51.4 gr.	53.4 gr.	55.4 gr.	57.4 gr.
H414			53.2 gr.	55.8 gr.	58.3 gr.
H4350		51.9 gr.	53.9 gr.	55.9 gr.	57.9 gr.
IMR 4831		54.5 gr.	56.4 gr.	58.2 gr.	60.1 gr.
RL-19	53.6 gr.	55.6 gr.	57.6 gr.	59.6 gr.	

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II

30-06

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match
Ballistic Coefficient — .450
C.O.L. — 3.230"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
AA 2520	42.6 gr.	44.8 gr.	47.0 gr.	49.3 gr.		
WIN 748	43.9 gr.	46.0 gr.	48.1 gr.	50.3 gr.		
IMR 4064	44.5 gr.	46.5 gr.	48.5 gr.	50.5 gr.		
WIN 760			51.3 gr.	54.1 gr.	56.8 gr.	59.5 gr.
H414			51.7 gr.	54.3 gr.	56.9 gr.	59.6 gr.
H4350	50.1 gr.	52.1 gr.	54.1 gr.	56.1 gr.	58.0 gr.	
IMR 4350	50.3 gr.	52.5 gr.	54.6 gr.	56.8 gr.		
IMR 4831	51.8 gr.	53.8 gr.	55.9 gr.	57.9 gr.	60.0 gr.	
RL-19	52.5 gr.	54.7 gr.	56.8 gr.	58.9 gr.	61.1 gr.	

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II



Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP

Ballistic Coefficient — .425
C.O.L. — 3.245"

**#3072 BTSP**

Ballistic Coefficient — .452
C.O.L. — 3.245"

**#3075 RN**

Ballistic Coefficient — .241
C.O.L. — 3.210"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
AA 2520	42.1 gr.	44.2 gr.			
IMR 4064	43.3 gr.	45.1 gr.	46.9 gr.	48.7 gr.	
WIN 748	43.1 gr.	45.2 gr.	47.3 gr.		
WIN 760		49.4 gr.	51.8 gr.	54.2 gr.	56.6 gr.
H414	47.5 gr.	49.8 gr.	52.1 gr.	54.4 gr.	
H4350	49.6 gr.	51.5 gr.	53.4 gr.	55.3 gr.	
IMR 4831	51.9 gr.	53.7 gr.	55.5 gr.	57.3 gr.	59.2 gr.
RL-19	52.1 gr.	54.3 gr.	56.4 gr.	58.5 gr.	60.6 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.220"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.220"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	41.3 gr.	43.1 gr.	45.0 gr.	46.9 gr.	
WIN 748	41.1 gr.	43.1 gr.	45.1 gr.	47.1 gr.	
WIN 760		46.6 gr.	48.7 gr.	50.9 gr.	53.1 gr.
H414		46.6 gr.	48.8 gr.	51.0 gr.	53.2 gr.
IMR 4350	46.3 gr.	48.3 gr.	50.3 gr.	52.3 gr.	54.3 gr.
IMR 4831		50.1 gr.	52.3 gr.	54.5 gr.	56.7 gr.
H4350	48.8 gr.	50.6 gr.	52.5 gr.	54.4 gr.	56.2 gr.
RL-19		51.4 gr.	53.5 gr.	55.7 gr.	57.8 gr.

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.230"



POWDER	VELOCITY			
	2200 fps	2300 fps	2400 fps	2500 fps
WIN 748	42.6 gr.	44.7 gr.	46.7 gr.	
WIN 760	45.6 gr.	47.9 gr.	50.2 gr.	
IMR 4350	46.1 gr.	48.3 gr.	50.5 gr.	
H414	45.8 gr.	48.3 gr.	50.8 gr.	
H4350	47.7 gr.	49.6 gr.	51.4 gr.	
IMR 4831	48.1 gr.	50.1 gr.	52.2 gr.	54.2 gr.
H4831	51.5 gr.	53.9 gr.	56.3 gr.	58.6 gr.

See Ballistics Tables on page 160, Vol. II



BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.665"
MAX. CASE LENGTH: 2.850"
CASE TRIM LENGTH: 2.840"

The 300 H&H case, originally developed from the 375 H&H, has formed the basis of many notable cartridge developments, most important among them the original series of Weatherby magnum cartridges. Remington offered their Model 700 Limited Edition Classic in 300 H&H and currently USRAC and Ruger catalog firearms in this fine caliber.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3010 SP
Ballistic Coefficient — .256
C.O.L. — 3.435"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	52.2 gr.	54.7 gr.	57.1 gr.	59.6 gr.	62.0 gr.
H4895	57.0 gr.	59.0 gr.	61.0 gr.	63.0 gr.	65.0 gr.
IMR 4064	58.0 gr.	60.0 gr.	62.0 gr.	64.0 gr.	
IMR 4320	58.6 gr.	60.6 gr.	62.6 gr.	64.6 gr.	66.5 gr.
H380		60.0 gr.	62.5 gr.	65.0 gr.	
IMR 4350		70.3 gr.	72.2 gr.	74.1 gr.	76.0 gr.
WIN 760		70.7 gr.	73.3 gr.	75.9 gr.	78.4 gr.
H4831		73.0 gr.	75.0 gr.	77.0 gr.	79.0 gr.

See Ballistics Tables on pages 124-127, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 3.480"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	53.5 gr.	55.7 gr.	58.0 gr.		
H4895	55.3 gr.	57.5 gr.	59.8 gr.	62.1 gr.	
IMR 4064	57.5 gr.	59.7 gr.	61.9 gr.		
IMR 4320	57.8 gr.	60.0 gr.	62.2 gr.	64.4 gr.	
H380	58.0 gr.	60.5 gr.	63.0 gr.		
IMR 4350	66.0 gr.	68.0 gr.	70.0 gr.	72.0 gr.	74.0 gr.
WIN 760		69.9 gr.	71.6 gr.	73.2 gr.	74.8 gr.
H4831		70.5 gr.	72.6 gr.	74.7 gr.	76.8 gr.

See Ballistics Tables on pages 129-132, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.226
.308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 3.555"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 3.561"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 3.325"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 3.583"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	52.0 gr.	54.1 gr.	56.2 gr.	58.3 gr.	
H4895	53.0 gr.	55.5 gr.	58.0 gr.	60.6 gr.	
IMR 4064	53.5 gr.	56.1 gr.	58.7 gr.	61.3 gr.	
IMR 4320	54.3 gr.	56.9 gr.	59.5 gr.	62.0 gr.	
H380	55.8 gr.	58.8 gr.	61.8 gr.		
IMR 4350		64.2 gr.	66.6 gr.	69.0 gr.	71.4 gr.
WIN 760	65.1 gr.	67.3 gr.	69.4 gr.	71.6 gr.	73.7 gr.
H4831		67.8 gr.	69.9 gr.	72.0 gr.	74.1 gr.
H450		68.0 gr.	70.8 gr.	73.5 gr.	76.3 gr.

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

300 H&H MAGNUM



Indicates maximum load • use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 3.610"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 3.610"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	52.5 gr.	54.8 gr.			
IMR 4320	54.0 gr.	56.5 gr.	59.1 gr.	61.7 gr.	
H4895	54.7 gr.	57.0 gr.	59.3 gr.	61.5 gr.	
IMR 4064	55.7 gr.	57.9 gr.	60.2 gr.	62.5 gr.	
H380	58.7 gr.	60.8 gr.	62.9 gr.	65.0 gr.	
IMR 4350		64.4 gr.	66.5 gr.	68.7 gr.	70.8 gr.
WIN 760		64.7 gr.	67.2 gr.	69.6 gr.	72.1 gr.
H4831	66.0 gr.	68.0 gr.	70.1 gr.	72.2 gr.	74.2 gr.
H450		67.1 gr.	69.7 gr.	72.3 gr.	74.9 gr.

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match
Ballistic Coefficient — .450
C.O.L. — 3.665"



POWDER	2800 fps	2900 fps	3000 fps	3100 fps
H4895	56.0 gr.	58.0 gr.	60.0 gr.	62.0 gr.
IMR 4064	57.0 gr.	59.0 gr.	61.0 gr.	63.0 gr.
IMR 4320	56.4 gr.	59.0 gr.	61.5 gr.	64.1 gr.
H380	57.7 gr.	60.3 gr.	63.0 gr.	65.6 gr.
IMR 4350	64.0 gr.	65.4 gr.	67.8 gr.	70.3 gr.
WIN 760	63.0 gr.	65.4 gr.	67.8 gr.	70.3 gr.
H4831	68.0 gr.	69.9 gr.	71.8 gr.	73.7 gr.
H450	67.0 gr.	69.7 gr.	72.3 gr.	75.0 gr.

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II

180 GRAIN BULLETS:

SECTIONAL DENSITY:	.271
DIAMETER:	.308"

#3070 SP
Ballistic Coefficient — .425
C.O.L. — 3.545"



#3072 BTSP
Ballistic Coefficient — .452
C.O.L. — 3.545"



#3075 RN
Ballistic Coefficient — .241
C.O.L. — 3.510"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	48.8 gr.	51.2 gr.	53.7 gr.		
H4895	51.5 gr.	54.0 gr.	56.5 gr.	59.0 gr.	
IMR 4064	51.8 gr.	54.2 gr.	56.8 gr.	59.2 gr.	
IMR 4320	50.2 gr.	53.3 gr.	56.4 gr.	59.5 gr.	
H380	53.3 gr.	56.0 gr.	58.8 gr.	61.5 gr.	
IMR 4350		60.2 gr.	62.7 gr.	65.2 gr.	67.7 gr.
WIN 760	58.8 gr.	61.3 gr.	63.8 gr.	66.2 gr.	
H4831		62.6 gr.	65.0 gr.	67.4 gr.	69.8 gr.
H450		61.2 gr.	64.3 gr.	67.5 gr.	70.6 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.655"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.655"



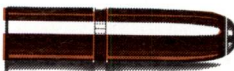
POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	53.7 gr.	56.1 gr.	58.4 gr.	60.8 gr.	
H4895	54.3 gr.	56.6 gr.	58.9 gr.	61.2 gr.	
IMR 4320	55.4 gr.	57.6 gr.	59.8 gr.	61.9 gr.	64.1 gr.
H380	55.7 gr.	58.2 gr.	60.6 gr.	63.1 gr.	65.6 gr.
IMR 4350	60.4 gr.	62.3 gr.	64.2 gr.	66.1 gr.	68.0 gr.
WIN 760	59.3 gr.	61.6 gr.	63.9 gr.	66.1 gr.	68.4 gr.
H450		64.6 gr.	67.7 gr.	70.7 gr.	73.7 gr.

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

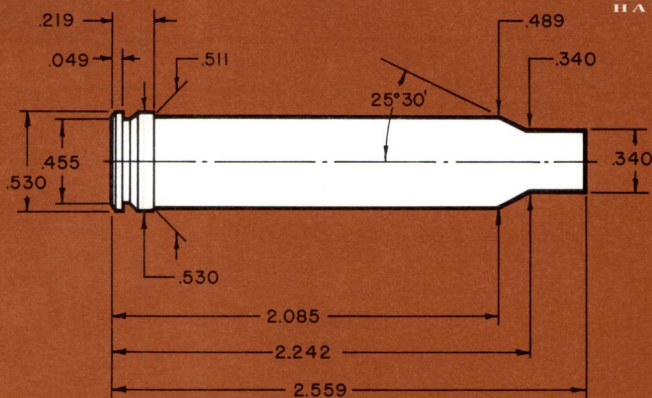
#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.580"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H4895	48.0 gr.	50.7 gr.	53.4 gr.	56.0 gr.	
IMR 4350	54.0 gr.	56.5 gr.	59.0 gr.	61.6 gr.	64.2 gr.
WIN 760	55.9 gr.	58.4 gr.	60.9 gr.	63.5 gr.	
H4831	56.0 gr.	59.0 gr.	62.0 gr.	65.0 gr.	
H450		60.0 gr.	62.5 gr.	65.0 gr.	67.5 gr.
H870	69.3 gr.	72.0 gr.	74.6 gr.	77.3 gr.	80.0 gr.

See Ballistics Tables on page 160, Vol. II

 Indicates maximum load • use with caution



308 NORMA MAGNUM

RIFLE: '03-A3 CONVERSION
BARREL: 24", 1 in 10" TWIST
CASE: NORMA
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.435"
MAX. CASE LENGTH: 2.559"
CASE TRIM LENGTH: 2.549"

The 308 Norma Magnum is a standardized commercial version of many "short magnum" wildcats developed in the 40's and 50's by American experimenters to give performance superior to the 30-06 while requiring only a standard length bolt action. Introduced in America by Sweden's Norma Projectilfabrik which offered unprimed cases and complete chambering specifications, the 308 Norma Magnum quickly caught on in this country as custom gunsmiths brought it into the market. The case is essentially the 358 Norma Magnum, (or 338 Winchester Magnum) necked to 30 caliber, and is very close to the wildcat 30/338. The introduction of the .300 Winchester Magnum in factory rifles and the wide availability of ammunition has hurt the popularity of the 308 Norma Magnum. Today, it is rarely encountered.

The 308 Norma is a powerful cartridge which is at its best loaded with slower burning powders (IMR 4350, H4831, and H450) and Hornady 165 and 180 grain Spire Points, though the 220 grain Round Nose can be loaded to a potent 2700 fps with the same powders. Shot to shot velocity is considerably more uniform with heavier bullets, i.e. 150 grain and up, than with lighter bullets, and those loads are best which most completely fill the case in loading for a specific velocity. The 308 Norma Magnum is first and foremost a big game cartridge, and has power to spare for nearly all North American hunting.

110 GRAIN BULLETS:

SECTIONAL DENSITY:	.166
DIAMETER:	.308"

#3010 SP
Ballistic Coefficient — .256
C.O.L. — 3.200"



#3015 RN
Ballistic Coefficient — .150
C.O.L. — 3.025"



POWDER	VELOCITY			
	3500 fps	3600 fps	3700 fps	3800 fps
IMR 3031	63.2 gr.	65.5 gr.	67.6 gr.	
IMR 4064	65.4 gr.	67.5 gr.	69.6 gr.	
H4895	67.7 gr.	70.0 gr.	72.2 gr.	74.4 gr.
IMR 4320	69.2 gr.	71.2 gr.	73.4 gr.	75.4 gr.
H380	69.0 gr.	71.4 gr.	73.6 gr.	
IMR 4350	76.2 gr.	78.8 gr.	81.2 gr.	

See Ballistics Tables on pages 124-127, 127-128, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY:	.196
DIAMETER:	.308"

#3020 SP
Ballistic Coefficient — .295
C.O.L. — 3.275"



POWDER	VELOCITY			
	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	57.5 gr.	60.0 gr.	62.8 gr.	65.5 gr.
IMR 4064	61.6 gr.	63.6 gr.	65.7 gr.	67.7 gr.
H4895	62.6 gr.	64.8 gr.	67.0 gr.	
IMR 4320	63.4 gr.	65.5 gr.	67.6 gr.	69.6 gr.
H380		67.4 gr.	70.0 gr.	72.4 gr.
IMR 4350	71.6 gr.	73.8 gr.	76.0 gr.	78.2 gr.

See Ballistics Tables on pages 129-132, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 3.350"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 3.356"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 3.120"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 3.378"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	59.6 gr.	61.6 gr.	63.6 gr.	65.8 gr.	
H4895	60.0 gr.	62.2 gr.	64.4 gr.	66.6 gr.	
IMR 4320	62.0 gr.	64.0 gr.	66.0 gr.	68.0 gr.	
H380	64.0 gr.	66.0 gr.	68.3 gr.	70.4 gr.	
IMR 4350	68.0 gr.	70.0 gr.	72.0 gr.	74.0 gr.	76.0 gr.
WIN 760		71.4 gr.	73.3 gr.	75.1 gr.	
H4831	72.0 gr.	74.1 gr.	76.2 gr.	78.3 gr.	
H450	71.8 gr.	74.0 gr.	76.4 gr.	78.8 gr.	

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II



Indicates maximum load • use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY:	.248
DIAMETER:	.308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 3.325"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 3.325"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4895		55.4 gr.	58.0 gr.	60.5 gr.	63.1 gr.
IMR 4064		56.0 gr.	58.4 gr.	60.8 gr.	
IMR 4320		53.9 gr.	57.4 gr.	61.0 gr.	
H380	57.7 gr.	59.9 gr.	62.0 gr.	64.2 gr.	
IMR 4350	62.7 gr.	64.5 gr.	66.3 gr.	68.0 gr.	69.8 gr.
WIN 760	61.3 gr.	63.8 gr.	66.2 gr.	68.7 gr.	
H4831	66.2 gr.	67.9 gr.	69.7 gr.	71.7 gr.	73.2 gr.
H450	65.5 gr.	67.9 gr.	70.2 gr.	72.5 gr.	74.8 gr.

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II



Indicates maximum load • use with caution

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match
Ballistic Coefficient — .450
C.O.L. — 3.325"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	53.8 gr.	56.1 gr.	58.4 gr.	60.7 gr.	
H4895	54.5 gr.	56.8 gr.	59.1 gr.	61.4 gr.	
IMR 4320	56.1 gr.	58.4 gr.	60.7 gr.	63.0 gr.	
H380	56.2 gr.	59.0 gr.	61.7 gr.	64.4 gr.	
IMR 4350	61.7 gr.	63.5 gr.	65.3 gr.	67.1 gr.	68.9 gr.
WIN 760	60.8 gr.	63.5 gr.	66.3 gr.	69.1 gr.	
H450	66.2 gr.	68.6 gr.	70.9 gr.	73.2 gr.	75.6 gr.
H4831	68.4 gr.	70.2 gr.	71.9 gr.	73.7 gr.	75.5 gr.

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II

308 NORMA MAGNUM

180 GRAIN BULLETS:

SECTIONAL DENSITY:	.271
DIAMETER:	.308"

#3070 SP
Ballistic Coefficient — .425
C.O.L. — 3.345"



#3072 BTSP
Ballistic Coefficient — .452
C.O.L. — 3.345"



#3075 RN
Ballistic Coefficient — .241
C.O.L. — 3.310"



POWDER	VELOCITY			
	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	58.0 gr.	60.0 gr.	62.5 gr.	
H4895	58.0 gr.	61.0 gr.	62.5 gr.	
IMR 4320	60.8 gr.	62.8 gr.	65.0 gr.	
H380	61.7 gr.	63.8 gr.	66.0 gr.	
WIN 760	64.2 gr.	67.0 gr.	69.8 gr.	
IMR 4350		67.2 gr.	69.4 gr.	71.5 gr.
H4831	69.9 gr.	72.0 gr.	74.0 gr.	76.1 gr.
H450		71.5 gr.	73.5 gr.	75.6 gr.

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

 Indicates maximum load • use with caution

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.435"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.435"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	53.6 gr.	56.2 gr.	58.8 gr.	61.4 gr.	
H4895	54.2 gr.	56.7 gr.	59.1 gr.	61.6 gr.	
IMR 4320	54.9 gr.	57.5 gr.	60.1 gr.	62.6 gr.	
IMR 4350	59.3 gr.	61.5 gr.	63.6 gr.	65.8 gr.	67.9 gr.
WIN 760	60.6 gr.	62.9 gr.	65.2 gr.	67.5 gr.	
H4831	66.1 gr.	68.2 gr.	70.4 gr.	72.5 gr.	

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

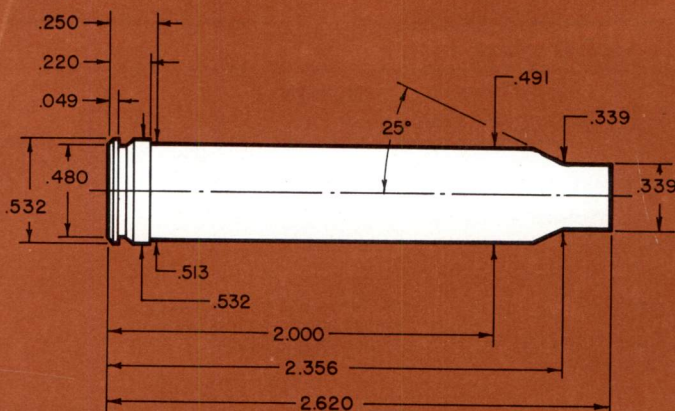
#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.360"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4350		61.5 gr.	63.8 gr.	66.1 gr.	68.4 gr.
WIN 760	58.5 gr.	61.2 gr.	63.9 gr.	66.7 gr.	
H4831		64.0 gr.	66.8 gr.	69.0 gr.	
H450		66.6 gr.	69.0 gr.	71.2 gr.	
H870	75.8 gr.	78.4 gr.	81.2 gr.		

See Ballistics Tables on page 160, Vol. II

Indicates maximum load • use with caution



300 WINCHESTER MAGNUM

RIFLE: WINCHESTER MODEL 70
BARREL: 24", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 215

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.340"
MAX. CASE LENGTH: 2.620"
CASE TRIM LENGTH: 2.610"

In 1963 Winchester introduced the 300 Winchester Magnum. The cartridge is based on the 338 Winchester with the shoulder moved forward by .156" and the case lengthened by .120". The only problem, if it is a problem, is the neck is less than 1 caliber in length. The 300 Winchester Magnum is on par with the 308 Norma Magnum and the 300 Weatherby Magnum, and is capable of taking all North American big game. It has steadily grown in popularity, and because it is chambered by many different arms manufacturers, it enjoys a much greater following than the 308 Norma or the 300 Weatherby. The 300 Winchester Magnum is also used extensively in 600 and 1000 yard matches.

Being 30 caliber has its advantages. The wide selection of bullets allows the cartridge a greater range of uses. If the reloader is inclined to do some varminting with his 300 Winchester, he can load the 110 grain Spire Point to 3600 fps or the 130 grain Spire Point to 3300 fps! For big game, the reloader has bullets from 150 to 220 grains to choose from.

In our rifle IMR 4350 gave very good results with light bullets, while RL-22 and IMR 7828 gave the best results with the heavier bullets. When using cases of this size, it is imperative that the reloader work with near maximum loads. Reduced loads with slow burning powder can produce dangerous hangfires, large muzzle flashes, and perhaps even high pressure.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3010 SP

Ballistic Coefficient — .256
C.O.L. — 3.300"



#3015 RN

Ballistic Coefficient — .150
C.O.L. — 3.125"



#3017 FMJ

Ballistic Coefficient — .178
C.O.L. — 3.125"



POWDER	VELOCITY			
	3300 fps	3400 fps	3500 fps	3600 fps
H4895	57.2 gr.	59.6 gr.		
IMR 4895	64.3 gr.	65.9 gr.	67.3 gr.	68.8 gr.
IMR 4064	65.9 gr.	67.8 gr.	69.7 gr.	
IMR 4350	73.5 gr.	75.7 gr.	77.9 gr.	80.1 gr.
H4350	75.9 gr.	77.8 gr.	79.8 gr.	

See Ballistics Tables on pages 124-127, 127-128, 128-129, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP

Ballistic Coefficient — .295
C.O.L. — 3.300"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RL-15	55.8 gr.	58.0 gr.	60.2 gr.	62.3 gr.	64.5 gr.
IMR 4064	58.2 gr.	60.3 gr.	62.3 gr.	64.3 gr.	66.4 gr.
IMR 4350	64.6 gr.	66.9 gr.	69.2 gr.	71.5 gr.	73.8 gr.
H4350	67.7 gr.	69.9 gr.	72.0 gr.	74.2 gr.	76.3 gr.
IMR 4831	69.6 gr.	71.7 gr.	73.7 gr.	75.8 gr.	77.9 gr.
H4831	72.2 gr.	74.8 gr.	77.4 gr.		

See Ballistics Tables on pages 129-132, Vol. II

Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 3.325"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 3.331"



#3035 RN

Ballistic Coefficient — .186
C.O.L. — 3.095"



#3037 FMJ

Ballistic Coefficient — .398
C.O.L. — 3.353"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4350	63.3 gr.	65.6 gr.	68.0 gr.	70.3 gr.	
IMR 4831	66.0 gr.	68.5 gr.	71.0 gr.	73.6 gr.	
H4350	67.7 gr.	69.8 gr.	71.9 gr.	74.0 gr.	76.1 gr.
RL-22		72.3 gr.	74.7 gr.	77.1 gr.	79.5 gr.
H4831	71.0 gr.	74.0 gr.			

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II



Indicates maximum load - use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP

Ballistic Coefficient — .387
C.O.L. — 3.340"

**#3045 BTSP**

Ballistic Coefficient — .435
C.O.L. — 3.340"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	53.5 gr.	56.3 gr.	59.1 gr.	61.8 gr.		
IMR 4831	63.8 gr.	66.5 gr.	69.1 gr.	71.8 gr.		
H4350	64.8 gr.	67.0 gr.	69.3 gr.	71.5 gr.		
IMR 4350	64.3 gr.	67.0 gr.	69.7 gr.			
AA 3100	66.9 gr.	69.1 gr.	71.2 gr.	73.4 gr.	75.5 gr.	
RL-22		69.6 gr.	72.0 gr.	74.3 gr.	76.7 gr.	79.1 gr.
H4831	69.2 gr.	71.6 gr.	74.0 gr.	76.4 gr.	78.9 gr.	

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match

Ballistic Coefficient — .450
C.O.L. — 3.340"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	54.8 gr.	57.1 gr.	59.3 gr.	61.5 gr.		
IMR 4350	60.4 gr.	62.8 gr.	65.1 gr.	67.5 gr.	69.8 gr.	
H4350	63.1 gr.	65.3 gr.	67.4 gr.	69.6 gr.	71.7 gr.	
IMR 4831	64.0 gr.	66.4 gr.	68.8 gr.	71.2 gr.		
RL-22		69.2 gr.	71.3 gr.	73.4 gr.	75.6 gr.	77.7 gr.
AA 3100	67.2 gr.	69.3 gr.	71.4 gr.	73.5 gr.	75.5 gr.	
H4831	64.4 gr.	68.2 gr.	71.9 gr.			

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP
Ballistic Coefficient — .425
C.O.L. — 3.340"



#3072 BTSP
Ballistic Coefficient — .452
C.O.L. — 3.340"



#3075 RN
Ballistic Coefficient — .241
C.O.L. — 3.305"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4831	59.4 gr.	62.6 gr.	65.8 gr.	69.0 gr.	
RL-19		62.8 gr.	66.7 gr.	70.6 gr.	
IMR 4350	60.5 gr.	63.4 gr.	66.2 gr.	69.1 gr.	
H4350	61.9 gr.	64.5 gr.	67.1 gr.	69.7 gr.	
AA 3100	63.6 gr.	66.6 gr.	69.6 gr.	72.5 gr.	
RL-22	65.0 gr.	67.7 gr.	70.4 gr.	73.1 gr.	75.7 gr.
IMR 7828		68.9 gr.	71.9 gr.	74.9 gr.	
H4831	67.6 gr.	70.4 gr.			
H1000	74.0 gr.	77.6 gr.			

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II



Indicates maximum load • use with caution

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.340"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.340"



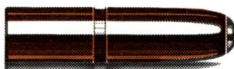
POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	53.9 gr.	56.2 gr.	58.5 gr.		
H4350	61.7 gr.	64.0 gr.	66.3 gr.	68.5 gr.	
IMR 4831	62.8 gr.	65.1 gr.	67.4 gr.	69.7 gr.	
RL-22	65.2 gr.	67.4 gr.	69.6 gr.	71.8 gr.	73.9 gr.
H4831	62.5 gr.	66.5 gr.	70.6 gr.		
IMR 7828	69.0 gr.	71.0 gr.	73.1 gr.	75.1 gr.	

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

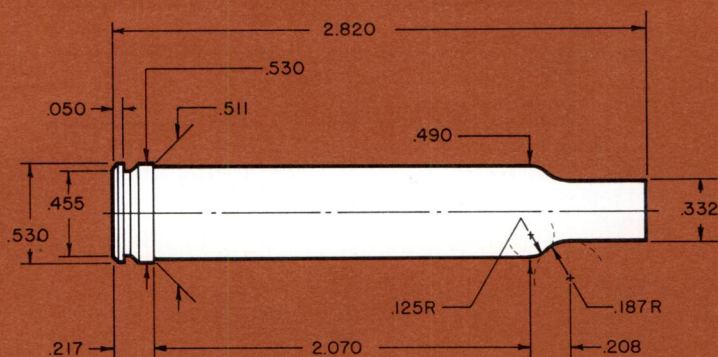
#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.340"



POWDER	VELOCITY			
	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4064	47.5 gr.	50.4 gr.	53.2 gr.	
IMR 4350		53.6 gr.	56.9 gr.	60.2 gr.
IMR 4831		56.2 gr.	59.9 gr.	63.5 gr.
H4350	56.1 gr.	58.6 gr.	61.1 gr.	63.7 gr.
RL-22		60.0 gr.	63.0 gr.	65.9 gr.
H4831	55.4 gr.	59.5 gr.	63.5 gr.	
IMR 7828	61.6 gr.	64.2 gr.	66.8 gr.	69.5 gr.

See Ballistics Tables on page 160, Vol. II

Indicates maximum load • use with caution



300 WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 24', 1 in 10" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 3.560"
MAX. CASE LENGTH: 2.820"
CAST TRIM LENGTH: 2.810"

The 300 Weatherby Magnum is the best known and most widely used cartridge in the powerful Weatherby series. The success of the 300 WM in downing game at long ranges or hunting dangerous species has done much to confirm Roy Weatherby's theories of the importance of velocity in killing power — and prepare the way for the development of a host of other high intensity magnum cartridges, including the competitive but less powerful 308 Norma and 300 Winchester magnums. Recently, two other major manufacturers, Winchester and Remington, have offered firearms in .300 Weatherby as they recognize the power and attraction of this potent cartridge.

With a full 400 fps top velocity advantage over the 30-06 when shooting 150, 165, or 180 gr. Hornady Spire Points, the 300 Weatherby Magnum can shoot flatter and place considerably more energy in distant targets than the '06 or its peers. Loaded with the explosive 130 gr. Spire Point it is the most powerful Weatherby suitable for varmint shooting.

As the loading data on the following pages will indicate, slower burning powders (IMR 4350, H4831, and H450) are the most appropriate choices in the big 300 WM case when hunting weight bullets are used. To ignite the hefty charges of powder required for top velocities the Federal 215 primer is recommended. (The 215, a hot magnum primer, was developed specifically for this task.)

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3010SP

Ballistic Coefficient — .256
C.O.L. — 3.510"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
RL-15	67.5 gr.	69.5 gr.	71.4 gr.	73.4 gr.	75.3 gr.	
H4895		70.7 gr.	72.8 gr.	74.9 gr.	77.0 gr.	79.1 gr.
IMR 4064		70.2 gr.	72.6 gr.	74.9 gr.	77.3 gr.	79.6 gr.
IMR 4831			87.4 gr.	88.9 gr.	90.4 gr.	91.9 gr.
IMR 4350			80.3 gr.	83.7 gr.	87.2 gr.	90.6 gr.

See Ballistics Tables on pages 124-127, Vol. II

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020SP

Ballistic Coefficient — .295
C.O.L. — 3.500"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	64.1 gr.	66.4 gr.	68.7 gr.	71.0 gr.	73.3 gr.	
RL-15	64.8 gr.	66.9 gr.	69.0 gr.	71.1 gr.	73.2 gr.	75.2 gr.
H4895		66.6 gr.	69.0 gr.	71.4 gr.	73.8 gr.	76.2 gr.
IMR 4831		78.6 gr.	81.0 gr.	83.4 gr.	85.8 gr.	88.2 gr.
IMR 4350			82.1 gr.	83.8 gr.	85.5 gr.	87.2 gr.
H4831	83.1 gr.	85.8 gr.	88.6 gr.	91.4 gr.		

See Ballistics Tables on pages 129-132, Vol. II

Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP
Ballistic Coefficient — .338
C.O.L. — 3.550"



#3033 BTSP
Ballistic Coefficient — .349
C.O.L. — 3.556"



#3035 RN
Ballistic Coefficient — .186
C.O.L. — 3.320"



#3037 FMJ-BT
Ballistic Coefficient — .398
C.O.L. — 3.578"



POWDER	VELOCITY						
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
RL-15		63.1 gr.	65.6 gr.	68.2 gr.	70.7 gr.	73.3 gr.	
IMR 4064		62.6 gr.	65.7 gr.	68.8 gr.	71.9 gr.		
IMR 4831			77.4 gr.	79.8 gr.	82.3 gr.	84.8 gr.	
IMR 4350	73.0 gr.	75.6 gr.	78.3 gr.	80.9 gr.			
H450				81.4 gr.	84.6 gr.	87.7 gr.	90.9 gr.

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, Vol. II

 Indicates maximum load • use with caution

165 GRAIN BULLETS:

SECTIONAL DENSITY: .248
DIAMETER: .308"

#3040 SP
Ballistic Coefficient — .387
C.O.L. — 3.560"



#3045 BTSP
Ballistic Coefficient — .435
C.O.L. — 3.560"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	62.0 gr.	64.6 gr.	67.2 gr.	69.8 gr.		
IMR 4350	72.4 gr.	75.3 gr.	78.2 gr.			
AA 3100	74.3 gr.	76.5 gr.	79.1 gr.	81.6 gr.	84.2 gr.	
H450		76.6 gr.	79.6 gr.	82.6 gr.	85.6 gr.	
RL-22		77.9 gr.	80.4 gr.	82.8 gr.	85.2 gr.	87.6 gr.
IMR 4831	80.9 gr.	81.7 gr.	82.6 gr.	83.4 gr.	84.2 gr.	
H4831	78.6 gr.	81.4 gr.	84.2 gr.			
IMR 7828		82.4 gr.	84.7 gr.	86.9 gr.	89.2 gr.	

See Ballistics Tables on pages 141-143, 144-146, 241-242, 266-267, Vol. II

300 WEATHERBY MAGNUM

Indicates maximum load • use with caution

168 GRAIN BULLETS:

SECTIONAL DENSITY: .253
DIAMETER: .308"

#3050 BTHP National Match
Ballistic Coefficient — .450
C.O.L. — 3.560"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	62.0 gr.	64.6 gr.	67.2 gr.	69.8 gr.		
IMR 4350	72.4 gr.	75.3 gr.	78.2 gr.			
AA 3100	74.3 gr.	76.5 gr.	79.1 gr.	81.6 gr.	84.2 gr.	
H450		76.6 gr.	79.6 gr.	82.6 gr.	85.6 gr.	
RL-22		77.9 gr.	80.4 gr.	82.8 gr.	85.2 gr.	87.6 gr.
IMR 4831	80.9 gr.	81.7 gr.	82.6 gr.	83.4 gr.	84.2 gr.	85.1 gr.
H4831	78.6 gr.	81.4 gr.	84.2 gr.			
IMR 7828		82.4 gr.	84.7 gr.	86.9 gr.	89.2 gr.	

See Ballistics Tables on pages 146-148, 242-243, 267-269, Vol. II

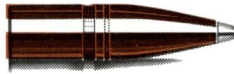
 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .271
DIAMETER: .308"

#3070 SP

Ballistic Coefficient — .425
C.O.L. — 3.560"



#3072 BTSP

Ballistic Coefficient — .452
C.O.L. — 3.560"



#3075 RN

Ballistic Coefficient — .241
C.O.L. — 3.555"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	58.9 gr.	61.8 gr.	64.7 gr.	67.5 gr.		
IMR 4831		70.8 gr.	73.5 gr.	76.3 gr.	79.0 gr.	81.8 gr.
IMR 4350	69.2 gr.	71.7 gr.	74.2 gr.	76.7 gr.		
AA 3100		72.3 gr.	75.6 gr.	78.8 gr.	82.1 gr.	
H450		71.4 gr.	75.1 gr.	78.9 gr.	82.6 gr.	
RL-22		74.8 gr.	77.3 gr.	79.9 gr.	82.4 gr.	85.0 gr.
IMR 7828		79.1 gr.	81.0 gr.	83.0 gr.	84.9 gr.	
H4831		78.6 gr.	81.0 gr.	83.5 gr.		

See Ballistics Tables on pages 150-152, 152-155, 155-157, 243-245, 269-270, 270-271, Vol. II

 Indicates maximum load • use with caution

190 GRAIN BULLETS:

SECTIONAL DENSITY: .286
DIAMETER: .308"

#3080 BTHP Match
Ballistic Coefficient — .530
C.O.L. — 3.560"



#3085 BTSP
Ballistic Coefficient — .491
C.O.L. — 3.560"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	59.8 gr.	62.9 gr.	66.0 gr.		
AA 3100	65.3 gr.	70.2 gr.	75.1 gr.	80.0 gr.	
H450		70.6 gr.	73.4 gr.	76.2 gr.	79.0 gr.
RL-22	72.7 gr.	74.8 gr.	77.3 gr.	79.9 gr.	82.5 gr.
IMR 7828	76.4 gr.	78.6 gr.	80.9 gr.	83.1 gr.	
H4831		76.9 gr.	79.0 gr.	81.1 gr.	83.2 gr.

See Ballistics Tables on pages 157-158, 158-159, 245-246, 246-247, 271-272, 272-273, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .331
DIAMETER: .308"

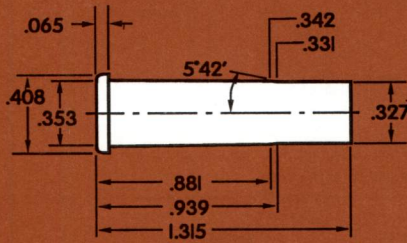
#3090 RN
Ballistic Coefficient — .300
C.O.L. — 3.535"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	60.7 gr.	63.1 gr.	65.6 gr.	68.0 gr.	
IMR 4831	66.7 gr.	69.5 gr.	72.3 gr.	75.1 gr.	
IMR 4350		69.3 gr.	72.4 gr.	75.5 gr.	
H450	67.1 gr.	70.4 gr.	73.7 gr.	77.0 gr.	
AA 3100	67.9 gr.	71.1 gr.	74.3 gr.	77.6 gr.	
RL-22	69.9 gr.	72.1 gr.	74.9 gr.	77.7 gr.	80.5 gr.
IMR 7828		75.9 gr.	78.2 gr.	80.6 gr.	83.0 gr.
H4831	73.1 gr.	76.2 gr.	79.3 gr.		

See Ballistics Tables on page 160, Vol. II

 Indicates maximum load • use with caution



32-20 WINCHESTER

RIFLE: MARLIN 1894CL
BARREL: 18½", 1 in 20" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 200

BULLET DIA.: .308"-.312"
MAXIMUM C.O.L.: 1.610"
MAX. CASE LENGTH: 1.315"
CASE TRIM LENGTH: 1.305"

The 32-20 was introduced by Winchester in 1882, as a black powder rifle cartridge for varmints and small game. It was suited to this task perfectly. As with several other contemporary cartridges, it was soon chambered in Colt single action and other revolvers. It became a popular cartridge, offered in other firearms by a variety of manufacturers. In 1895, Winchester necked it down to 25 caliber forming the 25-20 Winchester repeater. Thirty three years later, Winchester carried their cartridge one step further by necking it down to 22 caliber, naming it the .218 Bee. Smokeless powder prompted ammunition manufacturers to produce a high velocity 32-20 load for the Winchester Model 1892 with an eighty grain bullet at 2,130 fps. These high velocity loads and the following data should not be fired in older revolvers and rifles. *This data was developed in the modern Marlin 1894CL and should only be used in the Marlin and other firearms of comparable strength.* Note that the Marlin's bore size is .312" with conventional rifling, well suited for lead bullets. .308" Jacketed bullets usually shoot quite well in the .312" bore. If using .308" bullets, make sure your reloading die set has a .308" neck expander besides the normal .312" neck expander. Hornady New Dimension die sets come with both expanders. Only use modern brass cases, and exercise care when crimping as case necks and shoulders are easily crumpled.

It should be noted the 85 grain XTP/HP is designed for best performance at impact velocities between 750 fps and 1550 fps. Higher velocities produce faster expansion and less penetration and probably shouldn't be used on edible game, although this bullet should be fine for small varmints.

Note: Some firearms chambered for 32-20 are currently being offered with .308" caliber barrels. Use caution in developing loads and if unsure consult the firearms manufacturer for their specifications.

85 GRAIN BULLETS:

SECTIONAL DENSITY: .125
DIAMETER: .312"

#32050 HP/XTP

Ballistic Coefficient — .145
C.O.L. — 1.562"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
2400	10.5 gr.	11.2 gr.	11.9 gr.	12.6 gr.		
AA #9	11.5 gr.	12.1 gr.	12.7 gr.	13.3 gr.	13.9 gr.	14.5 gr.
H110	11.2 gr.	12.2 gr.	13.2 gr.	14.2 gr.	15.2 gr.	
IMR 4227	13.6 gr.	14.3 gr.	15.0 gr.	15.6 gr.	16.3 gr.	17.0 gr.
WIN 680	13.3 gr.	14.4 gr.	15.5 gr.	16.6 gr.	17.7 gr.	18.8 gr.

See Ballistics Tables on pages 277-279, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .166
DIAMETER: .308"

#3015 RN

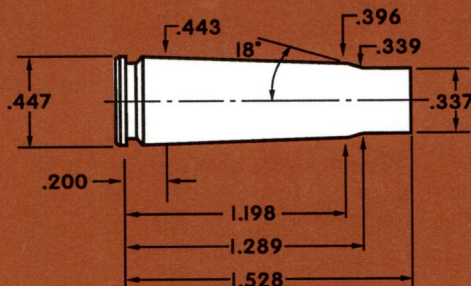
Ballistic Coefficient — .150
C.O.L. — 1.610"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	9.9 gr.	10.5 gr.				
AA #9	10.1 gr.	11.0 gr.	11.9 gr.	12.7 gr.		
H110	11.3 gr.	12.2 gr.	13.0 gr.	13.8 gr.	14.7 gr.	15.5 gr.
IMR 4227	12.0 gr.	12.9 gr.	13.7 gr.	14.6 gr.	15.4 gr.	
WIN 680	13.0 gr.	13.9 gr.	14.8 gr.	15.6 gr.	16.5 gr.	17.4 gr.

See Ballistics Tables on pages 127-128, Vol. II

 Indicates maximum load • use with caution



7.62 X 39, M43

RIFLE: SKS CARBINE
BARREL: 20", 1 in 7½" TWIST
CASE: MIDWAY
PRIMER: WINCHESTER WSR

BULLET DIA.: .308"-.310"
MAXIMUM C.O.L.: 2.190"
MAX. CASE LENGTH: 1.528"
CASE TRIM LENGTH: 1.518"

The Soviet-German battle at Cholm in 1942 saw the introduction of a new cartridge, a new weapon and a new military tactic, all German. The new German cartridge (the 8mm Kurz) was of intermediate power, about midway between the submachine cartridges and a full rifle cartridge. Experts determined that most combat occurred at less than 400 yards and an intermediate cartridge was ideal for those ranges. Also, full automatic fire with these intermediate cartridges was far more controllable than with a full rifle cartridge. The Soviets realized the importance of these developments, and in 1943 introduced their own similar development, including the 7.62 X 39 (M43) cartridge.

Soviet influence and military aid saw the worldwide spread of SKS carbines, AK-47 rifles, and RPD light machine guns, all chambered for the 7.62 X 39. It is currently the official military caliber of many countries including China and Finland, and very popular in others including the United States. In factory or military form, it offers a 123 grain FMJ bullet at 2300 fps. Reloaders can easily equal this, but it is difficult to substantially surpass due to limited powder capacity. Foreign produced firearms have a .311" bore and are most accurate with .310" diameter bullets from Hornady. Ruger manufactures their Mini-30 with a .308" bore and caution should be used in using oversize bullets in this firearm. Two expander balls are included in Hornady die sets so .308" bullets can be used in 7.62 X 39 cases. Some shooters report respectable accuracy in shooting .308 bullets in either bore size. The 150 grain data uses the .308 spire point for those interested in using this caliber for deer hunting.

This data was developed in a SKS carbine of Chinese origin. Simple, rugged and reliable are adjectives applicable to this firearm. Accuracy was acceptable for military application or short range hunting. Due to its shorter barrel, velocities were 80 fps lower in a Chinese manufactured semi-automatic 56-S, an AK-47 look alike.

The 7.62 X 39 mm case has been used by the Soviets to produce a smaller bore cartridge, the 5.45 X 39mm for the new AK-74 carbine. Also, the .22 PPC and 6mm PPC, the superbly accurate benchrest and varmint cartridges are based on this nearly 50 year old design.

123 GRAIN BULLETS:

SECTIONAL DENSITY:	.183
DIAMETER:	.310"

#3140 SP

Ballistic Coefficient — .252

C.O.L. — 2.190"



#3147 FMJ

Ballistic Coefficient — .266

C.O.L. — 2.190"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
AA 1680	20.1 gr.	20.8 gr.	22.3 gr.	23.9 gr.	
IMR 4198	22.0 gr.	22.8 gr.	23.7 gr.	24.6 gr.	
RL-7	21.9 gr.	23.0 gr.	24.2 gr.	25.4 gr.	26.6 gr.
H322	25.0 gr.	26.2 gr.	27.3 gr.	28.5 gr.	

See Ballistics Tables on pages 161-162, 162-163, Vol. II

 Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP

Ballistic Coefficient — .338
C.O.L. — 2.220"



#3033 BTSP

Ballistic Coefficient — .349
C.O.L. — 2.220"



#3037 FMJ-BT

Ballistic Coefficient — .398
C.O.L. — 2.220"

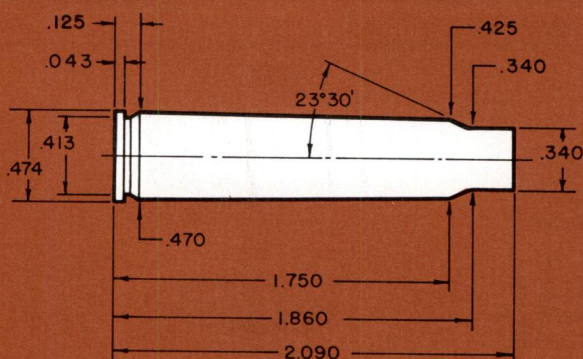


POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
IMR 4198	18.0 gr.	19.0 gr.	20.1 gr.	21.2 gr.	22.2 gr.
AA 1680	18.2 gr.	19.4 gr.	20.5 gr.	21.7 gr.	22.9 gr.
RL-7	18.8 gr.	19.9 gr.	21.2 gr.	22.2 gr.	
AA 2230	21.7 gr.	23.1 gr.	24.6 gr.	26.0 gr.	

See Ballistics Tables on pages 132-137, 139-141, Vol. II

Please note the round nose bullet will not feed through an automatic firearm.

7.62 X 39, M43



7.65mm BELGIAN MAUSER

RIFLE: ARGENTINE MAUSER M 1891
BARREL: 29", 1 in 9.8" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER .312"
MAXIMUM C.O.L.: 2.850"
MAX. CASE LENGTH: 2.090"
CASE TRIM LENGTH: 2.080"

The 7.65mm Belgian Mauser cartridge, known commercially as the 7.65mm x 53mm Mauser — or simply the 7.65mm Mauser — was designed initially for the Mauserwerke's Model 1889 rifle, the first small-bore, smokeless powder military rifle produced by that firm. Belgium purchased manufacturing rights to the Model 1889 and produced the rifle in several versions up until 1936. Mauser carried design features of the 1889 into its Models 1890 and 1891, arms adopted for military service by Turkey, Argentina, Bolivia, Peru, Paraguay, Ecuador, and Columbia.

Although Winchester and Remington at one time produced sporting rifles chambered for the 7.65mm Mauser, both discontinued production in the mid-1930s. The cartridge would have remained a virtual unknown in the U.S. had not large numbers of South American Mausers (principally from Argentina and Peru) been imported into the American market in the 1950s and early 1960s and again in the 1990s.

Reloaders using sporters based on the Model 1891 Mauser action should respect its strength limitations; it is not as strong as Mauser's more famous Model 1898, and maximum loads in the '91 should as consequence be developed cautiously. Model 1909 Mauser actions in 7.65x53 are of the stronger Model 1898 design. As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

150 GRAIN BULLETS:

SECTIONAL DENSITY: .220
DIAMETER: .312"

#3120 SP

Ballistic Coefficient — .361
C.O.L. — 2.815"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031		34.4 gr.	36.1 gr.	37.7 gr.	39.4 gr.	41.1 gr.
H4895		36.6 gr.	38.3 gr.	39.9 gr.	41.6 gr.	43.2 gr.
IMR 4064			38.4 gr.	40.3 gr.	42.2 gr.	44.1 gr.
IMR 4320	36.1 gr.	38.1 gr.	40.0 gr.	41.9 gr.	43.8 gr.	
H380		38.0 gr.	40.2 gr.	42.3 gr.	44.4 gr.	
IMR 4350	42.8 gr.	44.6 gr.	46.3 gr.	48.0 gr.	49.8 gr.	
H4831	46.7 gr.	48.0 gr.	49.3 gr.			

See Ballistics Tables on page 163, Vol. II

174 GRAIN BULLETS:

SECTIONAL DENSITY: .255
DIAMETER: .312"

#3130 RN

Ballistic Coefficient — .262
C.O.L. — 2.850"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031		36.3 gr.	38.1 gr.	39.9 gr.	41.7 gr.
IMR 4064	36.0 gr.	37.9 gr.	39.9 gr.	41.9 gr.	43.8 gr.
H4895	36.5 gr.	38.4 gr.	40.2 gr.	42.0 gr.	43.9 gr.
IMR 4320		38.6 gr.	40.6 gr.	42.6 gr.	44.6 gr.
H380		39.9 gr.	42.2 gr.	44.5 gr.	46.9 gr.
IMR 4350	42.0 gr.	43.9 gr.	45.8 gr.	47.7 gr.	

See Ballistics Tables on page 164, Vol. II



BULLET DIAMETER: .312"
MAXIMUM C.O.L.: 3.035"
MAX. CASE LENGTH: 2.222"
CASE TRIM LENGTH: 2.212"

In our testing we found that case life of the 303 British in SMLE (Short Magazine Lee Enfield) actions tended to be short when top loads were fired. Such actions allow cases to stretch when high velocities are used and head separation is the final result. Load down from the fastest velocities to prolong case life — and check cases frequently for signs of separation. As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

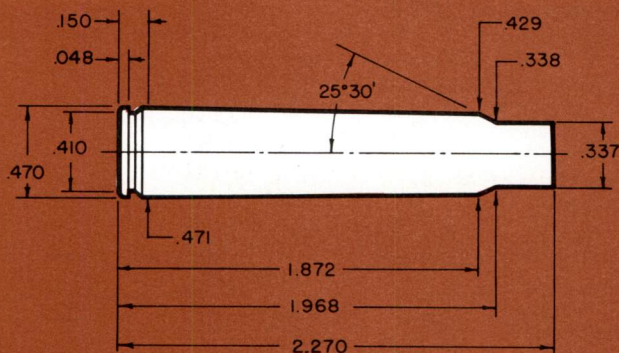
150 GRAIN BULLETS:**SECTIONAL DENSITY:****.220****DIAMETER:****.312"****#3120 SP****Ballistic Coefficient — .361****C.O.L. — 3.035"**

POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	34.5 gr.	36.0 gr.	37.5 gr.	39.0 gr.	40.5 gr.	42.0 gr.
BL-C2		37.3 gr.	38.8 gr.	40.3 gr.	41.8 gr.	
IMR 4064			39.0 gr.	40.5 gr.	42.0 gr.	43.5 gr.
H4895	36.9 gr.	38.4 gr.	39.9 gr.	41.4 gr.	42.9 gr.	
IMR 4320			40.4 gr.	42.2 gr.	44.1 gr.	
H380	38.2 gr.	40.0 gr.	41.9 gr.	43.7 gr.	45.6 gr.	
IMR 4350	41.6 gr.	43.7 gr.	45.9 gr.	48.0 gr.	50.1 gr.	
WIN 760	42.5 gr.	44.4 gr.	46.3 gr.	48.1 gr.	50.0 gr.	

*See Ballistics Tables on page 163, Vol. II***174 GRAIN BULLETS:****SECTIONAL DENSITY:****.255****DIAMETER:****.312"****#3130 RN****Ballistic Coefficient — .262****C.O.L. — 2.975"**

POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	31.4 gr.	33.2 gr.	35.1 gr.	36.9 gr.	
BL-C2	32.4 gr.	34.5 gr.	36.7 gr.	38.8 gr.	
IMR 4064			37.4 gr.	38.9 gr.	40.4 gr.
H4895	34.2 gr.	35.9 gr.	37.6 gr.	39.3 gr.	41.0 gr.
IMR 4320	34.3 gr.	36.1 gr.	37.8 gr.	39.7 gr.	41.5 gr.
H380		36.6 gr.	38.7 gr.	40.9 gr.	43.1 gr.
IMR 4350	39.8 gr.	41.5 gr.	43.1 gr.	44.8 gr.	46.5 gr.
WIN 760		41.5 gr.	43.4 gr.	45.3 gr.	47.2 gr.
H4831	42.5 gr.	44.3 gr.	46.2 gr.		

See Ballistics Tables on page 164, Vol. II
 Indicates maximum load • use with caution



7.7mm JAPANESE

RIFLE: JAPANESE TYPE 99
BARREL: 25½", 1 in 9½" TWIST
CASE: NORMA
PRIMER: FEDERAL 210

BULLET DIAMETER: .312"
MAXIMUM C.O.L.: 3.100"
MAX. CASE LENGTH: 2.270"
CASE TRIM LENGTH: 2.260"

The 7.7mm Japanese was adopted as that nation's service cartridge in 1939. Chambered in the strong, modified Mauser design Type 99 action, the cartridge/rifle combination was intended as a replacement for the older Type 38 Japanese 6.5mm Arisaka. The 7.7mm service round was superior to the cartridge it was intended to replace, but the 6.5mm remained in service during WWII as full conversion to the new rifle could not be achieved.

Type 99's came to this country first as war souvenirs and later as war surplus collected by American occupation forces. The 7.7mm cartridge for which they were designed is similar in power to the 303 British and the 7.65 Mauser, and was loaded for military use with a 184 grain bullet to a velocity of 2390 fps. With the 303 caliber (.312") Hornady 150 grain Spire Point we were able to reach 2700 fps thereby approximating the performance of the 30-40 Krag.

In the early years of reloading for the 7.7mm Japanese shooters had to reform 30-06 cases to make up ammunition. Since there are considerable case dimension differences, the prudent reloader will use the new Boxer-primed cases now imported to this country from Norma. Eventually, however, we may revert to the former situation. With limited stocks of Type 99's coming on the market, interest in the 7.7mm Japanese continues to decline from its post-war peak. As with all older military rifles, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

150 GRAIN BULLETS:

SECTIONAL DENSITY: .220
DIAMETER: .312"

#3120 SP
Ballistic Coefficient — .361
C.O.L. — 3.100"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	35.3 gr.	36.7 gr.	38.1 gr.	39.5 gr.	40.9 gr.	
H4895	36.9 gr.	38.8 gr.	40.8 gr.	42.7 gr.	44.7 gr.	
H380	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.		
IMR 4064	37.5 gr.	39.7 gr.	41.9 gr.	44.1 gr.	46.3 gr.	
IMR 4320		42.3 gr.	44.2 gr.	46.1 gr.		
IMR 4350	46.2 gr.	47.8 gr.	49.4 gr.	51.1 gr.	52.7 gr.	54.3 gr.
H4831	49.9 gr.	51.5 gr.	53.1 gr.	54.8 gr.	56.4 gr.	

See Ballistics Tables on page 163, Vol. II

174 GRAIN BULLETS:

SECTIONAL DENSITY: .255
DIAMETER: .312"

#3130 RN
Ballistic Coefficient — .262
C.O.L. — 3.000"

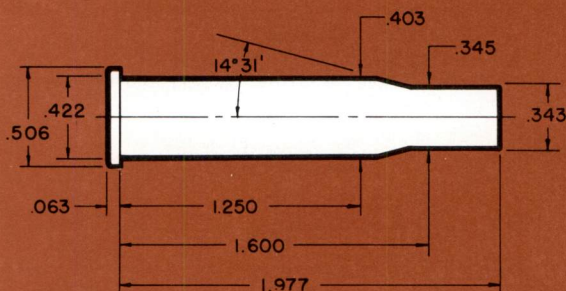


POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	31.8 gr.	33.3 gr.	34.8 gr.	36.3 gr.	37.8 gr.	39.3 gr.
H4895		34.5 gr.	36.6 gr.	38.7 gr.	40.8 gr.	42.9 gr.
IMR 4064	33.4 gr.	35.3 gr.	37.1 gr.	39.0 gr.	40.9 gr.	42.8 gr.
H380	33.6 gr.	35.4 gr.	37.3 gr.	39.1 gr.		
IMR 4320	34.7 gr.	36.4 gr.	38.2 gr.	40.0 gr.	41.8 gr.	
IMR 4350	40.1 gr.	42.0 gr.	43.9 gr.	45.9 gr.	47.8 gr.	
H4831	44.1 gr.	45.8 gr.	47.4 gr.	49.1 gr.	50.8 gr.	52.5 gr.

See Ballistics Tables on page 164, Vol. II



Indicates maximum load • use with caution



32 WINCHESTER SPECIAL

RIFLE: WINCHESTER MODEL 94
BARREL: 20", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .321"
MAXIMUM C.O.L.: 2.605"
MAX. CASE LENGTH: 2.040"
CASE TRIM LENGTH: 2.030"

The 32 Winchester Special had its origin in 1895 when it was introduced by Winchester in their Model 94 lever action. The intent was to offer a smokeless powder cartridge that could be reloaded with black powder. Needless to say, the hoped for popularity never came about.

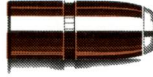
The power of the 32 Special is about the same as the 30-30. Hornady makes a 170 grain Flat Point bullet constructed with our famous Inner Groove and InterLock designs. These features allow uniform, controlled expansion and good weight retention on impact, without shedding the jacket. The 32 Special is an adequate deer cartridge for ranges up to 150 yards.

170 GRAIN BULLETS:

SECTIONAL DENSITY: .236
DIAMETER: .321"

#3210 FP

Ballistic Coefficient — .249
C.O.L. — 2.605"

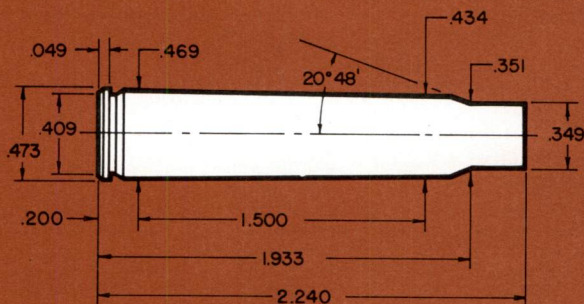


POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
H4198	22.7 gr.	23.9 gr.	25.0 gr.	26.1 gr.	27.3 gr.	
IMR 3031	26.1 gr.	27.5 gr.	28.8 gr.	30.2 gr.	31.5 gr.	32.8 gr.
IMR 4064	28.6 gr.	30.0 gr.	31.3 gr.	32.6 gr.	33.9 gr.	35.2 gr.
H4895		29.8 gr.	31.2 gr.	32.6 gr.	34.0 gr.	35.5 gr.
IMR 4320	29.4 gr.	30.9 gr.	32.4 gr.	33.9 gr.	35.4 gr.	36.9 gr.
H380		30.7 gr.	32.5 gr.	34.4 gr.	36.2 gr.	

See Ballistics Tables on page 165, Vol. II



Indicates maximum load • use with caution



8mm MAUSER (8 X 57 S)

RIFLE: MAUSER MODEL 1898
BARREL: 23", 1 in 9¼" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 9½

BULLET DIAMETER: .323"
MAXIMUM C.O.L.: 3.000"
MAX. CASE LENGTH: 2.240"
CASE TRIM LENGTH: 2.230"

The loading data presented here is for use in Model 98 Mauser actions or any other modern action chambered for the round. *Do not use this data for the Model 1888.* With any rifle of this caliber or any other older or converted rifles, reduce all loads by at least 15% and work up loads very carefully. All older military rifles should be carefully inspected by a knowledgeable gunsmith.

This German military round originated in 1888 with a bullet diameter of .318" and the cartridge was then designated the 8x57 J. In 1905 the bullet diameter was changed to .323" and the cartridge was then renamed the 8x57 JS or 8x57 S. It is also known as the 7.92 Mauser. The "S" part of the cartridge name denotes the new, larger diameter bullet.

The 8x57 S is a cartridge that largely duplicates the 30-06 and is therefore appropriate for nearly all North American game.

There are four Hornady bullets suitable for use in the 8x57 S: The 125 grain Spire Point for varminting, the 150 grain Spire Point and 170 grain Round Nose for medium game, and the 220 grain Spire Point for heavier game such as elk. The 220 grain Spire Point was designed primarily for the larger 8mm caliber cartridges and their increased velocities. It makes an excellent heavy game bullet when loaded to near maximum velocities in the 8x57 S.

IMR 4350 is an excellent choice for the 8x57 S with all Hornady bullets, as it performed very well with our test rifle.

125 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .323"

#3230 SP
Ballistic Coefficient — .246
C.O.L. — 2.880"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4198	37.8 gr.	39.0 gr.	40.3 gr.	41.6 gr.	42.8 gr.	44.1 gr.
IMR 3031	43.0 gr.	44.3 gr.	45.5 gr.	46.8 gr.	48.0 gr.	49.2 gr.
AA 2520	47.6 gr.	49.0 gr.	50.4 gr.	51.8 gr.	53.2 gr.	

See Ballistics Tables on pages 165-168, Vol. II

150 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .323"

#3232 SP
Ballistic Coefficient — .290
C.O.L. — 2.975"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	40.7 gr.	42.3 gr.	43.9 gr.	45.5 gr.	47.1 gr.	48.7 gr.
IMR 4064	43.0 gr.	44.5 gr.	46.0 gr.	47.5 gr.	49.0 gr.	50.4 gr.
AA 2520	43.2 gr.	45.2 gr.	47.2 gr.	49.2 gr.	51.2 gr.	
WIN 748			47.3 gr.	48.7 gr.	50.1 gr.	51.6 gr.
H4895	43.6 gr.	45.4 gr.	47.2 gr.	48.9 gr.	50.7 gr.	52.5 gr.
IMR 4320	44.1 gr.	46.0 gr.	47.9 gr.	49.7 gr.	51.6 gr.	53.5 gr.
H380	44.1 gr.	46.3 gr.	48.6 gr.	50.8 gr.	53.1 gr.	55.3 gr.
IMR 4350	51.2 gr.	53.3 gr.	55.4 gr.			

See Ballistics Tables on pages 168-170, Vol. II

170 GRAIN BULLETS:

SECTIONAL DENSITY: .233
DIAMETER: .323"

#3235 RN
Ballistic Coefficient — .217
C.O.L. — 2.890"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	40.4 gr.	42.1 gr.	43.8 gr.	45.5 gr.	47.2 gr.
IMR 4064	42.2 gr.	43.8 gr.	45.4 gr.	47.0 gr.	48.6 gr.
H4895	43.3 gr.	45.0 gr.	46.7 gr.	48.4 gr.	50.1 gr.
IMR 4320	44.0 gr.	45.7 gr.	47.4 gr.	49.1 gr.	50.8 gr.
AA 2520	42.1 gr.	44.5 gr.	46.8 gr.	49.1 gr.	51.5 gr.
WIN 748	44.8 gr.	46.3 gr.	47.8 gr.	49.3 gr.	50.9 gr.
H380	43.0 gr.	45.4 gr.	47.9 gr.	50.3 gr.	52.8 gr.
IMR 4350	49.3 gr.	51.6 gr.	53.8 gr.	56.0 gr.	

See Ballistics Tables on pages 170-172, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .301
DIAMETER: .323"

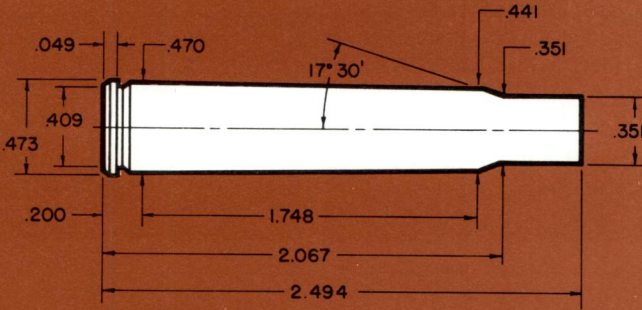
#3238 SP
Ballistic Coefficient — .464
C.O.L. — 3.000"



POWDER	VELOCITY			
	2000 fps	2100 fps	2200 fps	2300 fps
IMR 4064	38.4 gr.	40.1 gr.		
IMR 4350	41.8 gr.	44.0 gr.	46.1 gr.	
WIN 760	42.5 gr.	44.4 gr.	46.4 gr.	
IMR 4831	46.3 gr.	48.4 gr.	50.4 gr.	

See Ballistics Tables on pages 172-174, 247-248, Vol. II

 Indicates maximum load • use with caution



8mm/06

RIFLE: MAUSER MODEL 1898
BARREL: 23½", 1 in 9¼" TWIST
CASE: GOVERNMENT
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .323"
MAXIMUM C.O.L.: 3.175"
MAX. CASE LENGTH: 2.494"
CASE TRIM LENGTH: 2.484"

This fine wildcat is, as its name clearly indicates, the 30-06 case necked up to 8mm. Necessity played a substantial role in its development and its rise to popularity; owners of Mauser Model 1898's chambered for the 8 x 57 found it difficult to come by 8mm Mauser ammo and cases during and in the first years after WWII. By simply rechambering their Mausers for the necked up '06 case, they solved their ammo problems — and got some added benefits in terms of improved performance. As many surplus military 8mm's reached the U.S. civilian market through the 1950's, the 8mm/06 conversion grew even more popular. While this surge of shooter interest in the 8mm/06 has receded, it left in its wake a great many fans of this wildcat. However, it parallels the development of several European calibers: the 8x64 Brenneke, a sporting cartridge and the 8x63 used in some Swedish military units.

Bullet selection for the 8mm/06 is not as extensive as it is for the 30-06, but it is nonetheless adequate. The Hornady 150 grain Spire Point is by far our most popular bullet for the 8mm/06. Efficient and accurate, the 150 grain SP is preferred when game will be hunted at longer ranges. The dependable 170 grain Round Nose is an excellent choice for hunting at close to moderate ranges. The 125 grain Spire Point is a real threat to varmints, while the 220 grain Spire Point is suitable for larger game such as elk and moose.

125 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .323"

#3230 SP
Ballistic Coefficient — .246
C.O.L. — 3.105"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	46.6 gr.	48.1 gr.	49.5 gr.	51.0 gr.	52.5 gr.	54.0 gr.
IMR 4064	49.5 gr.	51.0 gr.	52.6 gr.	54.2 gr.	55.7 gr.	
H4895	49.8 gr.	51.4 gr.	52.9 gr.	54.4 gr.	55.9 gr.	57.4 gr.
BL-C2	48.5 gr.	50.4 gr.	52.3 gr.	54.2 gr.	56.1 gr.	
H380			54.3 gr.	55.8 gr.	57.3 gr.	58.8 gr.
IMR 4320	50.9 gr.	52.5 gr.	54.2 gr.	55.8 gr.	57.4 gr.	59.0 gr.

See Ballistics Tables on pages 165-168, Vol. II

150 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .323"

#3232 SP
Ballistic Coefficient — .290
C.O.L. — 3.175"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		45.1 gr.	46.8 gr.	48.6 gr.	50.4 gr.	52.2 gr.
H4895	45.9 gr.	47.7 gr.	49.5 gr.	51.3 gr.	53.1 gr.	54.9 gr.
IMR 4064	46.3 gr.	48.0 gr.	49.8 gr.	51.5 gr.	53.3 gr.	55.0 gr.
BL-C2	45.2 gr.	47.3 gr.	49.4 gr.	51.5 gr.	53.5 gr.	
IMR 4320	47.2 gr.	49.0 gr.	50.7 gr.	52.4 gr.	54.1 gr.	
H380	49.2 gr.	50.9 gr.	52.7 gr.	54.5 gr.	56.3 gr.	
WIN 760	52.8 gr.	54.7 gr.	56.6 gr.	58.5 gr.	60.4 gr.	62.2 gr.
IMR 4350	54.2 gr.	55.9 gr.	57.5 gr.	59.2 gr.		

See Ballistics Tables on pages 168-170, Vol. II

 Indicates maximum load • use with caution

170 GRAIN BULLETS:

SECTIONAL DENSITY: .233
DIAMETER: .323"

#3235 RN

Ballistic Coefficient — .217
C.O.L. — 3.080"



8mm/06

POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031		45.3 gr.	47.1 gr.	48.9 gr.	50.7 gr.
IMR 4064		47.8 gr.	49.6 gr.	51.4 gr.	53.3 gr.
H4895		47.8 gr.	49.7 gr.	51.6 gr.	53.6 gr.
IMR 4320	46.8 gr.	48.6 gr.	50.4 gr.	52.3 gr.	54.1 gr.
BL-C2	47.3 gr.	49.0 gr.	50.7 gr.	52.4 gr.	54.2 gr.
H380	48.4 gr.	50.4 gr.	52.4 gr.	54.4 gr.	56.4 gr.
IMR 4350			55.4 gr.	58.0 gr.	60.6 gr.
WIN 760	53.1 gr.	54.8 gr.	56.5 gr.	58.2 gr.	59.8 gr.

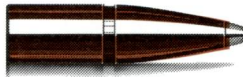
See Ballistics Tables on pages 170-172, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .301
DIAMETER: .323"

#3238 SP

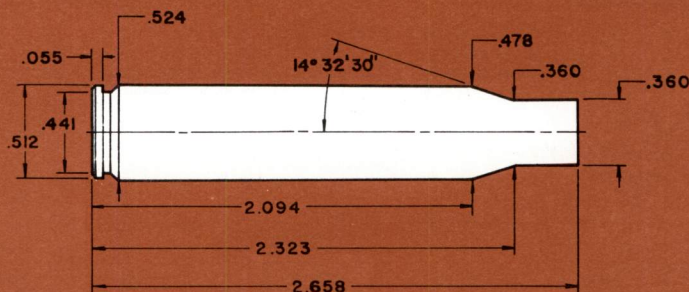
Ballistic Coefficient — .464
C.O.L. — 3.153"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fs	2300 fps	2400 fps
IMR 4064	38.1 gr.	40.0 gr.	42.0 gr.	44.0 gr.	45.9 gr.	
H380	41.4 gr.	43.2 gr.	44.9 gr.			
IMR 4350	43.2 gr.	45.4 gr.	47.5 gr.	49.6 gr.	51.7 gr.	53.8 gr.
H414	44.4 gr.	46.4 gr.	48.5 gr.	50.6 gr.	52.6 gr.	54.7 gr.
AA 3100	44.4 gr.	46.6 gr.	48.8 gr.	51.0 gr.	53.3 gr.	55.5 gr.
RL-19	45.7 gr.	47.5 gr.	49.2 gr.	51.0 gr.	52.8 gr.	54.6 gr.

See Ballistics Tables on pages 172-174, 247-248, Vol. II

 Indicates maximum load • use with caution



8mm X 68mm S

RIFLE: MAUSER 66
BARREL: 26", 1 in 11⁵/₈" TWIST
CASE: RWS
PRIMER: FEDERAL 215

BULLET DIAMETER: .323"
MAXIMUM C.O.L.: 3.425"
MAX. CASE LENGTH: 2.658"
CASE TRIM LENGTH: 2.648"

This modern cartridge was developed in Germany by RWS in 1940. The 8 X 68 S is a non-belted magnum that narrowly misses duplicating the ballistics of the 338 Winchester and the 8mm Remington Magnum and would make a superb all around big game rifle for North America. Publicity in the U.S. has been minimal primarily because there are few rifles imported that are chambered for this round.

Hornady provides four .323" diameter bullets that work very well in the 8 X 68 S: The 125 grain Spire Point, the 150 grain Spire Point, the 170 grain Round Nose, and the 220 grain Spire Point. The 220 grain Spire Point is the best bullet choice for most hunting situations that the 8 X 68 enthusiast might encounter. This bullet is designed to give controlled expansion at the higher velocities the 8 X 68 S and the 8mm Remington Magnum cartridges deliver. Also as in all Hornady hunting bullets, the 220 grain Spire Point features our Inner Groove jacket design for controlled expansion and the InterLock ring that locks the core and jacket together to prevent separation on impact.

During our testing the powder that performed best in our firearm was IMR 4350.

Dies for reloading the 8 X 68 S are currently available from Hornady Manufacturing and cases are available from RWS.

125 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .323"

#3230 SP**Ballistic Coefficient — .246****C.O.L. — 3.325"**

POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4350	70.1 gr.	72.1 gr.	74.2 gr.	76.3 gr.	
WIN 760	71.8 gr.	74.1 gr.	76.4 gr.	78.7 gr.	81.0 gr.
H450	75.9 gr.	78.7 gr.	81.4 gr.	84.2 gr.	

*See Ballistics Tables on pages 165-168, Vol. II***150 GRAIN BULLETS:**

SECTIONAL DENSITY: .205
DIAMETER: .323"

#3232 SP**Ballistic Coefficient — .290****C.O.L. — 3.400"**

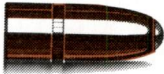
POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4350	67.0 gr.	69.2 gr.	71.4 gr.	73.5 gr.	
WIN 760	67.6 gr.	69.8 gr.	72.0 gr.	74.2 gr.	76.4 gr.
IMR 4831	70.4 gr.	72.3 gr.	74.3 gr.		
H450	71.0 gr.	73.9 gr.	76.7 gr.	79.6 gr.	82.4 gr.

See Ballistics Tables on pages 168-170, Vol. II*Indicates maximum load • use with caution*

170 GRAIN BULLETS:

SECTIONAL DENSITY: .233
DIAMETER: .323"

#3235 RN
Ballistic Coefficient — .217
C.O.L. — 3.250"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4350	63.6 gr.	65.7 gr.	67.9 gr.	70.0 gr.	72.1 gr.
WIN 760	64.8 gr.	67.2 gr.	69.5 gr.	71.9 gr.	74.3 gr.
IMR 4831	66.8gr.	69.0 gr.	71.2 gr.	73.4 gr.	75.5 gr.
H450		70.5 gr.	73.1 gr.	75.7 gr.	78.3 gr.

See Ballistics Tables on pages 170-172, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .301
DIAMETER: .323"

#3238 SP
Ballistic Coefficient — .464
C.O.L. — 3.425"



POWDER	VELOCITY			
	2400 fps	2500 fps	2600 fps	2700 fps
WIN 760	57.6 gr.	60.2 gr.	62.9 gr.	65.5 gr.
IMR 4350	58.5 gr.	60.6 gr.	62.7 gr.	64.7 gr.
IMR 4831	60.2 gr.	62.6 gr.	65.0 gr.	67.4 gr.
H450	61.6 gr.	64.0 gr.	66.4 gr.	68.8 gr.

See Ballistics Tables on pages 172-174, 247-248, Vol. II

 Indicates maximum load • use with caution



BULLET DIAMETER: .323"
MAXIMUM C.O.L.: 3.600"
MAX. CASE LENGTH: 2.850"
CASE TRIM LENGTH: 2.840"

During our testing IMR 4350 gave the most uniform results with the best accuracy.

125 GRAIN BULLETS:

SECTIONAL DENSITY: .171
DIAMETER: .323"

#3230 SP

Ballistic Coefficient — .246

C.O.L. — 3.550"



VELOCITY

POWDER	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064		68.8 gr.	70.7 gr.	72.6 gr.	74.5 gr.	76.4 gr.
IMR 4350	75.6 gr.	77.5 gr.	79.4 gr.	81.4 gr.	83.3 gr.	85.2 gr.
IMR 4831	81.5 gr.	83.7 gr.	86.0 gr.	88.2 gr.	90.4 gr.	

See Ballistics Tables on pages 165-168, Vol. II

150 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .323"

#3232 SP

Ballistic Coefficient — .290

C.O.L. — 3.550"



VELOCITY

POWDER	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	66.2 gr.	68.3 gr.	70.4 gr.	72.6 gr.	74.7 gr.
IMR 4320	67.6 gr.	70.0 gr.	72.5 gr.	74.9 gr.	
IMR 4350	73.9 gr.	75.9 gr.	77.8 gr.	79.8 gr.	
IMR 4831	78.8 gr.	80.5 gr.	82.2 gr.	83.9 gr.	85.6 gr.

See Ballistics Tables on pages 168-170, Vol. II

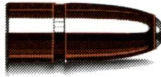
 Indicates maximum load • use with caution

170 GRAIN BULLETS:

SECTIONAL DENSITY: .233
DIAMETER: .323"

#3235 RN

Ballistic Coefficient — .217
C.O.L. — 3.450"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	62.0 gr.	67.7 gr.	67.4 gr.	70.2 gr.	
IMR 4320		67.0 gr.	69.4 gr.	71.7 gr.	74.1 gr.
IMR 4350	71.0 gr.	73.0 gr.	75.1 gr.	77.2 gr.	79.2 gr.
IMR 4831		77.1 gr.	79.1 gr.	81.2 gr.	83.2 gr.

See Ballistics Tables on pages 170-172, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY: .301
DIAMETER: .323"

#3238 SP

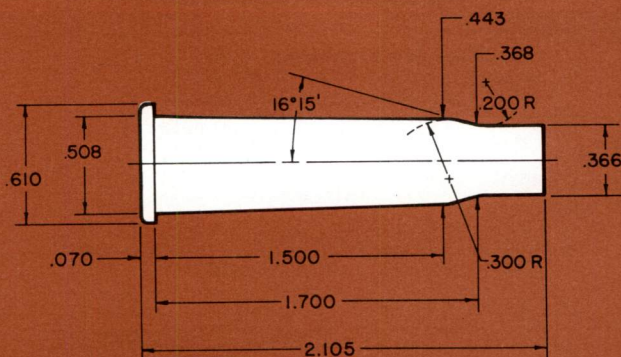
Ballistic Coefficient — .464
C.O.L. — 3.600"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps
IMR 4320	60.4 gr.	63.3 gr.	66.2 gr.	69.2 gr.		
IMR 4350	64.9 gr.	67.6 gr.	70.3 gr.	73.0 gr.		
IMR 4831		70.6 gr.	73.2 gr.	75.8 gr.	77.0 gr.	78.3 gr.
H4831		72.9 gr.	75.4 gr.	77.8 gr.	79.0 gr.	80.3 gr.
H450	72.4 gr.	74.8 gr.	77.2 gr.	79.7 gr.	80.9 gr.	82.1 gr.
H870	82.9 gr.	85.8 gr.	88.7 gr.	91.5 gr.	93.0 gr.	

See Ballistics Tables on pages 172-174, 247-248, Vol. II

 Indicates maximum load • use with caution



33 WINCHESTER

RIFLE: WINCHESTER MODEL 1886
 BARREL: 24", 1 in 12" TWIST
 CASE: REMINGTON
 PRIMER: WINCHESTER

BULLET DIAMETER: .338"
 MAXIMUM C.O.L.: 2.690"
 MAX. CASE LENGTH: 2.105"
 CASE TRIM LENGTH: 2.095"

The 33 Winchester came into existence in 1902 and was chambered in Winchester's Model 1886 lever action. In 1936 the cartridge was superseded by the 348 Winchester. The 33 Winchester never had a large following due in part to the lack of bullets available and the introduction of better cartridges shortly after its origin. Hornady is the only manufacturer that produces a suitable bullet for the 33 Winchester at the present time — the 200 grain Flat Point, which is specifically designed for the velocities obtainable with the .33 Winchester.

Because the 1886 action is not as strong as the more modern lever actions presently available, maximum loads listed should be approached with considerable caution.

200 GRAIN BULLETS:

SECTIONAL DENSITY: .250
DIAMETER: .338"

#3315 FP

Ballistic Coefficient — .200
C.O.L. — 2.690"

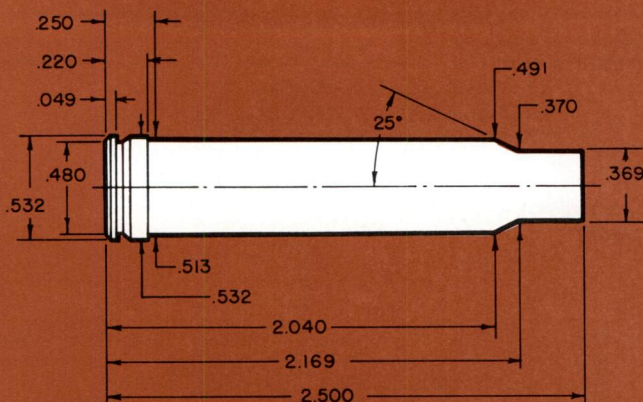


POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
H4198	28.0 gr.	30.1 gr.	32.3 gr.	34.5 gr.		
IMR 3031	33.3 gr.	35.0 gr.	36.6 gr.	38.3 gr.	40.0 gr.	
IMR 4064	35.1 gr.	37.1 gr.	39.2 gr.	41.2 gr.		
H4895	35.1 gr.	37.1 gr.	39.1 gr.	41.1 gr.	43.1 gr.	45.1 gr.
WIN 748		37.1 gr.	39.1 gr.	41.2 gr.	43.2 gr.	

See Ballistics Tables on page 176, Vol. II

33 WINCHESTER

 Indicates maximum load • use with caution



338 WINCHESTER MAGNUM

RIFLE: WINCHESTER MODEL 70
BARREL: 24", 1 in 10" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .338"
MAXIMUM C.O.L.: 3.340"
MAX. CASE LENGTH: 2.500"
CASE TRIM LENGTH: 2.490"

In 1958 Winchester necked down their proprietary 458 cartridge to 338 caliber and introduced the 338 Winchester Magnum in their already popular Model 70 rifle. It is currently offered in a variety of firearms including the Remington 700 limited edition classic, Ruger M77's and Number 1's and even Browning's BAR among others. This powerful and flat shooting cartridge is excellent for taking all North American game and most large African plains species. It is becoming very popular for elk, moose and brown bear hunting.

Hornady offers four bullets for the 338: The 200 grain Spire Point and the 225 grain Spire Point for elk and medium sized game, and the 250 grain Spire Point or round nose bullets for heavy and dangerous game. The 225 grain Spire Point provides greater energy than the 200 grain Spire Point for those long range shots of 400 to 500 yards.

During our testing the powders that gave the best overall results were IMR 4831 and RL-19. All powders listed performed satisfactorily. Caution: Loads should not be reduced from those listed, as hangfires and large muzzle flash may occur. All large capacity cartridges operate best at near maximum charges.

200 GRAIN BULLETS:

SECTIONAL DENSITY: .250
DIAMETER: .338"

#3310 SP

Ballistic Coefficient — .361
C.O.L. — 3.340"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	54.6 gr.	57.2 gr.	59.9 gr.	62.6 gr.	
Scot 4351	60.8 gr.	63.6 gr.	66.4 gr.	69.2 gr.	
IMR 4350	64.1 gr.	66.5 gr.	69.0 gr.	71.4 gr.	
H4350	63.6 gr.	66.4 gr.	69.3 gr.	72.1 gr.	
IMR 4831	65.4 gr.	68.0 gr.	70.6 gr.	73.3 gr.	75.9 gr.
RL-19	65.9 gr.	68.5 gr.	71.1 gr.	73.7 gr.	76.3 gr.
AA 3100	65.4 gr.	68.3 gr.	71.2 gr.	74.1 gr.	

See Ballistics Tables on pages 174-176, Vol. II

225 GRAIN BULLETS:

SECTIONAL DENSITY: .281
DIAMETER: .338"

#3320 SP

Ballistic Coefficient — .397
C.O.L. — 3.340"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
Scot 4351	58.7 gr.	61.1 gr.	63.5 gr.	65.9 gr.	
IMR 4350	59.9 gr.	62.5 gr.	65.1 gr.	67.7 gr.	
H4350	60.6 gr.	63.4 gr.	66.1 gr.	68.8 gr.	
IMR 4831	62.4 gr.	64.9 gr.	67.4 gr.	69.9 gr.	72.3 gr.
RL-19	62.4 gr.	65.2 gr.	67.9 gr.	70.7 gr.	73.4 gr.
AA 3100	62.6 gr.	65.4 gr.	68.2 gr.	71.0 gr.	
H4831	63.7 gr.	66.8 gr.	70.0 gr.	73.2 gr.	
H450		63.4 gr.	68.5 gr.	73.5 gr.	

See Ballistics Tables on pages 177-178, Vol. II

Indicates maximum load • use with caution

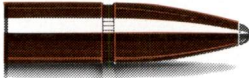
250 GRAIN BULLETS:

SECTIONAL DENSITY: .313
DIAMETER: .338"

#3330 RN
Ballistic Coefficient — .291
C.O.L. — 3.340"



#3335 SP
Ballistic Coefficient — .431
C.O.L. — 3.340"



POWDER	VELOCITY			
	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4350	58.6 gr.	62.8 gr.	67.0 gr.	
H4350	61.8 gr.	65.3 gr.	68.7 gr.	
IMR 4831	62.2 gr.	65.6 gr.	69.0 gr.	
RL-19	63.1 gr.	65.8 gr.	68.4 gr.	71.1 gr.
H450	64.5 gr.	68.4 gr.	72.3 gr.	
IMR 7828	68.1 gr.	71.1 gr.	74.1 gr.	

See Ballistics Tables on pages 178-180, 180-182, 248-249, Vol. II

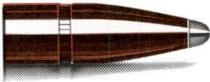


Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .250
DIAMETER: .338"

#3310 SP
Ballistic Coefficient — .361
C.O.L. — 3.680"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	65.7 gr.	68.4 gr.	71.0 gr.	73.7 gr.	76.3 gr.	
IMR 4350	75.2 gr.	77.0 gr.	78.8 gr.	80.5 gr.	82.3 gr.	84.1 gr.
WIN 760	74.6 gr.	77.0 gr.	79.5 gr.	81.9 gr.	84.3 gr.	
IMR 4831	76.8 gr.	79.0 gr.	81.2 gr.	83.4 gr.	85.6 gr.	
H4350		77.3 gr.	80.2 gr.	83.1 gr.	85.9 gr.	
H4831		80.7 gr.	82.2 gr.	84.0 gr.	86.2 gr.	89.9 gr.
RL-19		79.1 gr.	81.7 gr.	84.2 gr.	86.8 gr.	89.3 gr.
AA 3100		79.9 gr.	82.4 gr.	84.9 gr.	87.4 gr.	
H450		79.8 gr.	82.6 gr.	85.5 gr.	88.3 gr.	

See Ballistics Tables on pages 174-176, Vol. II



Indicates maximum load • use with caution

225 GRAIN BULLETS:

SECTIONAL DENSITY: .281
DIAMETER: .338"

#3320 SP
Ballistic Coefficient — .397
C.O.L. — 3.655"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4320	64.9 gr.	67.6 gr.	70.4 gr.			
WIN 760	72.5 gr.	74.7 gr.	76.9 gr.			
IMR 4350	72.0 gr.	74.4 gr.	77.0 gr.	79.5 gr.	82.0 gr.	
H4350		76.0 gr.	78.6 gr.	81.2 gr.	83.9 gr.	
IMR 4831	75.3 gr.	77.3 gr.	79.3 gr.	81.3 gr.	83.3 gr.	
RL-19			80.1 gr.	82.5 gr.	84.8 gr.	87.2 gr.
AA 3100		77.9 gr.	80.2 gr.	82.6 gr.		
H4831		78.6 gr.	80.3 gr.	82.2 gr.	84.8 gr.	
H450		78.9 gr.	81.4 gr.	83.9 gr.	86.4 gr.	
IMR 7828		82.5 gr.	85.6 gr.	88.7 gr.	91.8 gr.	

See Ballistics Tables on pages 177-178, Vol. II

250 GRAIN BULLETS:

SECTIONAL DENSITY: .313
DIAMETER: .338"

#3330 RN
Ballistic Coefficient — .291
C.O.L. — 3.665"



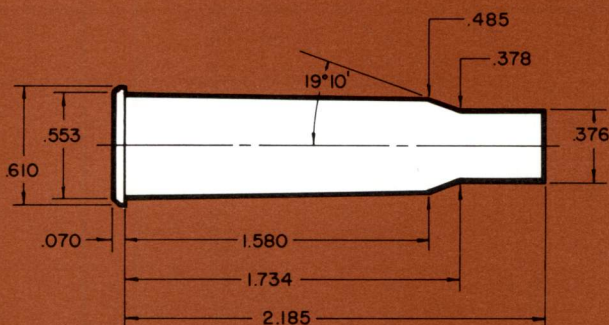
#3335 SP
Ballistic Coefficient — .431
C.O.L. — 3.655"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4320	63.9 gr.	67.0 gr.	70.1 gr.		
IMR 4350	71.8 gr.	74.4 gr.	77.0 gr.	79.6 gr.	
H4350		75.3 gr.	78.0 gr.	80.7 gr.	83.4 gr.
IMR 4831	74.3 gr.	76.5 gr.	78.7 gr.	80.9 gr.	
AA 3100	74.0 gr.	76.7 gr.	79.3 gr.	82.0 gr.	
RL-19	73.5 gr.	76.1 gr.	78.8 gr.	81.5 gr.	84.2 gr.
H4831	75.4 gr.	77.5 gr.	79.6 gr.	81.7 gr.	
H450	75.0 gr.	77.5 gr.	80.1 gr.	82.6 gr.	
IMR 7828	78.6 gr.	81.5 gr.	84.3 gr.	87.1 gr.	90.0 gr.

See Ballistics Tables on pages 178-180, 180-182, 248-249, Vol. II

 Indicates maximum load • use with caution



348 WINCHESTER

RIFLE: WINCHESTER MODEL 71
BARREL: 24", 1 in 12" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .348"
MAXIMUM C.O.L.: 2.830"
MAX. CASE LENGTH: 2.255"
CASE TRIM LENGTH: 2.245"

The only American rifle ever made for the 348 Winchester was that firm's Model 71, a modernized version of the old lever action Model 1886. Announced in 1936, the Model 71 was discontinued in 1958 after new cartridge and rifle developments (the 358 Winchester and the Model 88 lever action) made it obsolete. The big Model 71 was a well made firearm, but bulky and expensive to produce. Its top ejection necessitated side mounting of the telescopic sights more and more hunters prefer today. The Model 88 which superseded it (albeit in different calibers) was designed to handle higher pressure cartridges and to accommodate scopes more readily. However, Browning introduced a superb Japanese manufactured replica that may have renewed some interest in this cartridge.

The 348 Winchester is among the most powerful of the rimmed smokeless powder cartridges so popular in lever actions. It is a good big game hunting cartridge for moderate ranges and brushy conditions and one still quite popular in Alaska.

The 348 caliber 200 grain Hornady Flat Point can be loaded up to 2500 fps in the Model 71, and this bullet offers exceptionally dependable expansion for sure killing power with the 348 Winchester cartridge. Velocities in the 20" carbine are generally 100-150 fps less than the 24" barreled rifle. IMR 4320 and IMR 4350 are fine powder choices for loading the 348 case.

200 GRAIN BULLETS:

SECTIONAL DENSITY: .236
DIAMETER: .348"

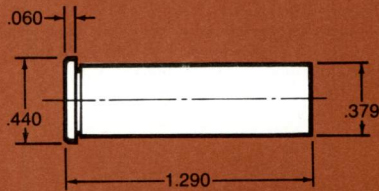
#3410 FP
Ballistic Coefficient — .246
C.O.L. — 2.830"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031		42.6 gr.	44.8 gr.	47.0 gr.	49.2 gr.
H4895		44.0 gr.	47.0 gr.	50.0 gr.	53.0 gr.
IMR 4064	41.8 gr.	44.9 gr.	48.0 gr.	51.1 gr.	
IMR 4320	44.1 gr.	46.6 gr.	49.1 gr.	51.6 gr.	54.1 gr.
WIN 760		51.9 gr.	54.3 gr.	56.7 gr.	59.1 gr.
IMR 4350	54.2 gr.	55.9 gr.	57.5 gr.	59.1 gr.	60.7 gr.
H450	58.2 gr.	60.1 gr.	62.1 gr.	64.1 gr.	
H4831	58.5 gr.	60.8 gr.	63.1 gr.	65.4 gr.	

See Ballistics Tables on pages 182-183, Vol. II

 Indicates maximum load • use with caution



357 MAGNUM (RIFLE)

RIFLE: WINCHESTER MODEL 1892
BARREL: 22³/₄", 1 in 36" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WSP

BULLET DIAMETER: .357"
MAXIMUM C.O.L.: 1.590"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

There's a certain appeal to the idea of reloading one cartridge for both rifle and pistol, and a good many shooters have purchased a pair of Ruger 44 Magnums, such as the Super Blackhawk pistol and the Ruger Carbine, to simplify their reloading. Marlin, Browning and several other manufacturers have met this demand for 357 Magnum rifles and are producing lever actions, pumps, and single shots for this "pistol cartridge."

When chambering in a rifle, such as the lever action Winchester Model 1892 we used in our tests, the 357 Magnum cartridge can produce enough energy to be marginally effective on light game out to 100 yards or so. The longer barrel of the rifle permits muzzle velocities up to 600 fps faster than those possible with 357 Magnum handguns. The muzzle energy difference between top rifle and pistol loads is an even more impressive 567 ft.-lbs. with the Hornady 38 caliber (.357" diameter) 158 grain Hollow Point.

125 GRAIN BULLETS:

SECTIONAL DENSITY:	.140
DIAMETER:	.357"

#35710 HP/XTP
Ballistic Coefficient — .151
C.O.L. — 1.590"



#35730 FP/XTP
Ballistic Coefficient — .148
C.O.L. — 1.590"



POWDER	VELOCITY						
	1650 fps	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps	1950 fps
BULLSEYE	7.5 gr.	7.9 gr.	8.2 gr.	8.5 gr.	8.9 gr.		
UNIQUE	8.1 gr.	8.5 gr.	8.9 gr.	9.3 gr.	9.7 gr.	10.0 gr.	
2400	13.7 gr.	14.1 gr.	14.5 gr.	14.9 gr.	15.3 gr.	15.7 gr.	16.1 gr.

See Ballistics Tables on pages 299-302, 302-306, Vol. II

158 GRAIN BULLETS:

SECTIONAL DENSITY:	.177
DIAMETER:	.357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 1.590"



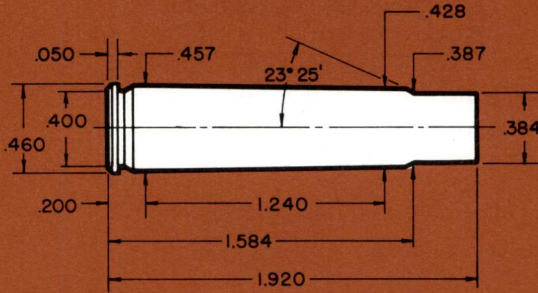
#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.590"



POWDER	VELOCITY				
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
BULLSEYE	6.3 gr.	6.6 gr.			
UNIQUE	6.9 gr.	7.4 gr.	7.9 gr.	8.4 gr.	8.9 gr.
2400	11.9 gr.	12.3 gr.	12.8 gr.	13.2 gr.	13.6 gr.

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II

 Indicates maximum load • use with caution



35 REMINGTON

RIFLE: MARLIN MODEL 336 SC
BARREL: 20", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIA.: .357-.358"
MAXIMUM C.O.L.: 2.540"
MAX. CASE LENGTH: 1.920"
CASE TRIM LENGTH: 1.910"

In 1908 Remington introduced the 35 Remington in their Model 8 semi-automatic rifle and later in their Model 14, 141, and 760 pump action rifles and the Model 81 semi-automatic rifle. The 35 Remington is a short range, woods type hunting cartridge that is a favorite of deer hunters who hunt the crowded areas and need a short, fast handling, and effective deer rifle. The 35 Remington is superior to the 30-30 Winchester in ballistics and closely approximates the new 375 Winchester. The lighter 158 grain bullets can give quite good accuracy even though .001" smaller than specified diameter. These lighter bullets are probably best used for practice or varmint hunting. The 200 grain bullets are designed for game animals such as deer and black bear.

With the rising popularity of Handgun Silhouette shooting, the 35 Remington cartridge enjoys an added following. Thompson Center Arms Company offers their single shot Contender pistol in the venerable 35 Remington cartridge.

The following loading data will not give the same velocities in a 10" or 14" T/C barrel, but will supply a starting point and maximum loading data. Maximum loads should be approached with caution. *The 200 grain Spire Point should not be used in guns with tubular magazines, as recoil could initiate the detonation of the remaining rounds in the magazine.* Firearms, such as the Remington Model 8, 81 and the much newer Model 760, all of which are clip fed, can safely use the Spire Point bullet.

158 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 2.235"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 2.235"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
2400	19.8 gr.	21.0 gr.	22.2 gr.	23.4 gr.	24.6 gr.	25.8 gr.
H4227	22.0 gr.	23.1 gr.	24.1 gr.	25.2 gr.	26.2 gr.	27.3 gr.
IMR 3031	29.5 gr.	31.0 gr.	32.5 gr.	34.0 gr.	35.5 gr.	37.0 gr.

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II



Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP

Ballistic Coefficient — .282
C.O.L. — 2.540"



#3515 RN

Ballistic Coefficient — .195
C.O.L. — 2.510"

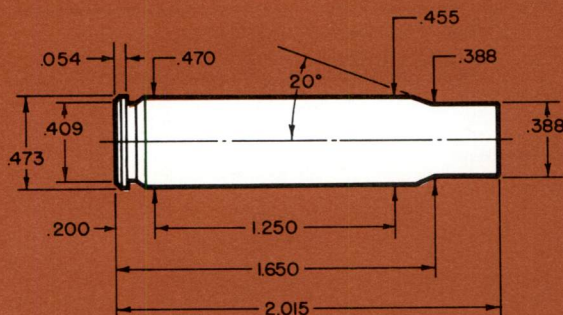


POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
RL-7	24.2 gr.	25.9 gr.	27.5 gr.	29.2 gr.	
H4198	25.5 gr.	26.6 gr.	27.7 gr.	28.8 gr.	
H322		27.8 gr.	29.8 gr.	31.8 gr.	33.8 gr.
IMR 3031	29.9 gr.	31.4 gr.	33.0 gr.	34.5 gr.	36.0 gr.
BL-C2		34.0 gr.	35.6 gr.	37.2 gr.	38.8 gr.
H4895		34.3 gr.	35.9 gr.	37.5 gr.	39.1 gr.
IMR 4064	33.0 gr.	34.6 gr.	36.2 gr.	37.8 gr.	39.4 gr.
WIN 748	31.9 gr.	33.9 gr.	35.9 gr.	37.9 gr.	39.9 gr.
IMR 4320	32.3 gr.	34.3 gr.	36.3 gr.	38.3 gr.	40.3 gr.
H380	33.6 gr.	35.7 gr.	37.7 gr.	39.8 gr.	41.9 gr.

Firearms with tubular magazines should only use the Round Nose bullet, as Spire Point bullets could, under recoil, ignite the remaining rounds in the magazine.

See Ballistics Tables on pages 185-187, 187-189, Vol. II

35 REMINGTON



358 WINCHESTER

RIFLE: WINCHESTER MODEL 70
BARREL: 22", 1 in 12" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .358"
MAXIMUM C.O.L.: 2.798"
MAX. CASE LENGTH: 2.015"
CASE TRIM LENGTH: 2.005"

The 358 Winchester and the 35 Whelen which preceded it by 36 years may be considered parallel developments, for the 358 is a necked up 308 Winchester cartridge and the 35 Whelen is a necked up 30-06. Winchester introduced its 358 in 1955 and chambered its Models 70 and 88 for the new cartridge. Ballistically superior to the older and larger 348 Winchester and far more powerful and versatile than the 35 Remington, the 358 nevertheless failed to succeed in the market and Winchester has discontinued chambering rifles for the cartridge. Only a few other manufacturers chambered rifles for this caliber, including Savage M99's Mannlicher-Schoenauers, Ruger 77's, and Browning BLR's. Browning is still producing their excellent lever action for this fine hunting cartridge.

While the newer 350 Remington Magnum will drive the 200 grain Hornady up to 200 fps faster than the 358 Winchester, with heavier 35 caliber bullets the 358 nearly achieves the same top velocities with considerably less powder. Part of this may be attributed to the 3½" longer barrel of the Model 70 we used in our testing versus the 18½" barrel of the Model 600 used with the Remington magnum. Thus, in the field, one probably could tell little effective difference between the two calibers.

200 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.223**
.358"**#3510 SP****Ballistic Coefficient — .282**
C.O.L. — 2.725"**#3515 RN****Ballistic Coefficient — .195**
C.O.L. — 2.695"

POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H4198		35.5 gr.	37.2 gr.	38.9 gr.	40.6 gr.
IMR 3031		39.5 gr.	41.3 gr.	43.1 gr.	44.9 gr.
H4895		41.9 gr.	44.1 gr.	46.4 gr.	48.7 gr.
IMR 4064		42.9 gr.	44.7 gr.	46.6 gr.	48.5 gr.
BL-C2		42.9 gr.	45.5 gr.	48.2 gr.	
IMR 4320		43.1 gr.	45.6 gr.	48.1 gr.	50.6 gr.
WIN 748	41.8 gr.	44.7 gr.	47.7 gr.	50.7 gr.	53.7 gr.
H380	43.3 gr.	46.2 gr.	49.0 gr.		

See Ballistics Tables on pages 185-187, 187-189, Vol. II Indicates maximum load • use with caution

250 GRAIN BULLETS:

SECTIONAL DENSITY: .279
DIAMETER: .358"

#3520 SP
Ballistic Coefficient — .375
C.O.L. — 3.798"



#3525 RN
Ballistic Coefficient — .271
C.O.L. — 2.775"



POWDER	VELOCITY			
	2000 fps	2100 fps	2200 fps	2300 fps
H4198	34.2 gr.	36.0 gr.	37.8 gr.	39.6 gr.
IMR 3031	37.8 gr.	39.7 gr.	41.5 gr.	
BL-C2	40.4 gr.	43.2 gr.	46.1 gr.	49.0 gr.
H4895	40.9 gr.	42.9 gr.	44.8 gr.	
WIN 748	42.1 gr.	44.4 gr.	46.7 gr.	

See Ballistics Tables on pages 189-191, 191-193, Vol. II



Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP

Ballistic Coefficient — .282
C.O.L. — 2.740"



#3515 RN

Ballistic Coefficient — .195
C.O.L. — 2.710"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H4198	40.6 gr.	42.5 gr.	44.5 gr.	46.6 gr.		
IMR 3031	46.3 gr.	48.1 gr.	50.0 gr.	51.8 gr.	53.6 gr.	
IMR 4064	49.8 gr.	51.3 gr.	52.9 gr.	54.5 gr.	56.0 gr.	
H4895	49.7 gr.	51.7 gr.	53.8 gr.	55.8 gr.	57.9 gr.	
IMR 4320	51.3 gr.	52.5 gr.	54.4 gr.	56.5 gr.	58.5 gr.	60.5 gr.
H380		53.3 gr.	55.0 gr.	56.6 gr.		
WIN 760	57.5 gr.	59.3 gr.	61.2 gr.	63.0 gr.	64.8 gr.	

See Ballistics Tables on pages 185-187, 187-189, Vol. II

250 GRAIN BULLETS:

SECTIONAL DENSITY: .279
DIAMETER: .358"

#3520 SP

Ballistic Coefficient — .375
C.O.L. — 2.930"



#3525 RN

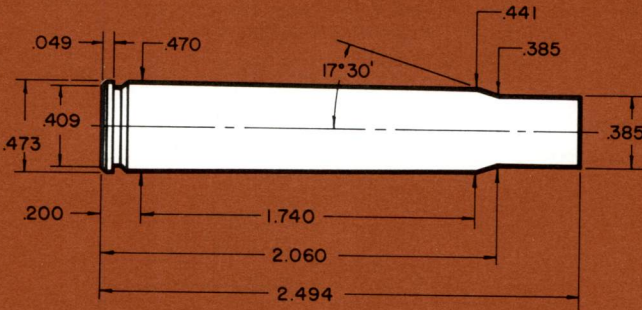
Ballistic Coefficient — .217
C.O.L. — 2.930"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	40.9 gr.	42.9 gr.	45.0 gr.	47.0 gr.	49.0 gr.	51.0 gr.
H4895	43.7 gr.	45.5 gr.	47.3 gr.	49.1 gr.	51.0 gr.	
IMR 4064	43.6 gr.	45.6 gr.	47.5 gr.	49.5 gr.	51.4 gr.	
IMR 4320	45.0 gr.	47.0 gr.	49.0 gr.	50.9 gr.	53.9 gr.	54.9 gr.
WIN 760	51.6 gr.	53.2 gr.	55.0 gr.	56.6 gr.	58.3 gr.	

See Ballistics Tables on pages 189-191, 191-193, Vol. II

Indicates maximum load • use with caution



35 WHELEN

RIFLE: REMINGTON MODEL 700
BARREL: 22", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 210

BULLET DIAMETER: .358"
MAXIMUM C.O.L.: 3.340"
MAX. CASE LENGTH: 2.494"
CASE TRIM LENGTH: 2.484"

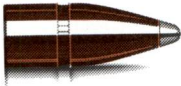
Named in honor of the noted rifleman and outdoorsman, Col. Townsend Whelen, the 35 Whelen was a 1922 wildcat development by James Howe of Griffin & Howe. In 1988, Remington started production of firearms (M700 and M7600) and ammunition in this caliber. Ruger has followed suit in their M77 and barrels are available for the Thompson-Center TCR Model 83 and 87.

The 35 Whelen is the 30-06 case necked up to 35 caliber, and is powerful and flexible enough for all North American game. At the time of its introduction, a magnum Mauser action alone cost about the price of two complete domestic sporting rifles, and hunters wanting a rifle which would approximate the power of the big 375 H&H had to dig deep in their pockets to achieve their goal. But the 35 Whelen gave hunters a fine low cost alternative; the cartridge was short enough to work through standard length (30-06) actions, conversion to the Whelen was simple, and cases could be made easily by running 30-06 brass over a 35 caliber expander plug. A tapered expander greatly aids this necking up process. Though 35 Whelen performance falls several hundred feet per second short of 375 velocities with comparable bullets, the 35 Whelen is nevertheless a potent, accurate and dependable medium to big game cartridge.

180 GRAIN BULLETS:

SECTIONAL DENSITY: .201
DIAMETER: .358"

#3505 SSSP
Ballistic Coefficient — .248
C.O.L. — 3.150"



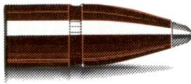
POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2750 fps
Scot 4197	48.1 gr.	50.2 gr.	52.3 gr.	54.4 gr.	55.4 gr.
AA 2520	50.3 gr.	52.6 gr.	54.9 gr.	57.2 gr.	58.3 gr.
Scot 3032	52.8 gr.	54.5 gr.	56.2 gr.		
IMR 4895	51.2 gr.	53.9 gr.	56.5 gr.	59.1 gr.	
IMR 4064	51.7 gr.	54.5 gr.	57.4 gr.		
RL-15	54.6 gr.	56.8 gr.	59.1 gr.		

See Ballistics Tables on pages 183-185, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP
Ballistic Coefficient — .282
C.O.L. — 3.075"



#3515 RN
Ballistic Coefficient — .195
C.O.L. — 3.045"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2650 fps
Scot 4197	47.2 gr.	49.3 gr.	51.3 gr.	53.4 gr.	
AA 2520	46.8 gr.	49.8 gr.	52.8 gr.	55.8 gr.	57.3 gr.
IMR 4895	50.7 gr.	52.6 gr.	54.4 gr.	56.2 gr.	
Scot 3032	51.2 gr.	52.9 gr.	54.6 gr.		
IMR 4064	51.5 gr.	53.9 gr.	56.2 gr.	58.5 gr.	
RL-15	54.0 gr.	55.9 gr.	57.8 gr.		

See Ballistics Tables on pages 185-187, 187-189, Vol. II

 Indicates maximum load • use with caution

250 GRAIN BULLETS:

SECTIONAL DENSITY:

.279

DIAMETER:

.358"

#3520 SP

Ballistic Coefficient — .375

C.O.L. — 3.275"



#3525 RN

Ballistic Coefficient — .271

C.O.L. — 3.240"



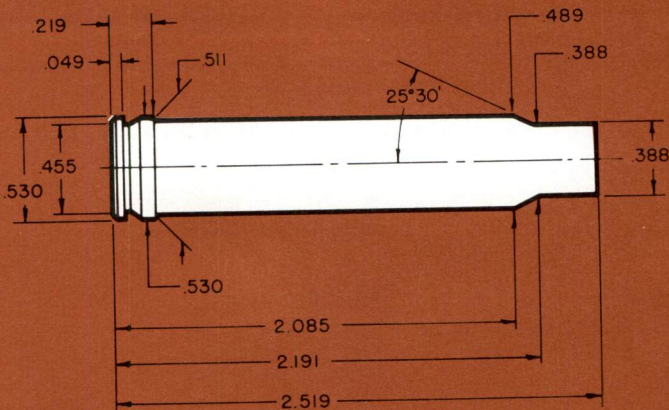
35 WHELEN

VELOCITY

POWDER	2100 fps	2200 fps	2300 fps	2400 fps
Scot 4197	43.4 gr.	45.9 gr.	48.4 gr.	50.8 gr.
IMR 4895	46.5 gr.	48.5 gr.	50.5 gr.	52.5 gr.
AA 2520	45.5 gr.	48.2 gr.	50.8 gr.	53.5 gr.
Scot 3032	46.8 gr.	49.2 gr.	51.6 gr.	54.0 gr.
IMR 4064	46.4 gr.	49.2 gr.	51.9 gr.	54.7 gr.
RL-15	49.4 gr.	51.3 gr.	53.2 gr.	55.1 gr.

See Ballistics Tables on pages 189-191, 191-193, Vol. II

 Indicates maximum load • use with caution



358 NORMA MAGNUM

RIFLE: REMINGTON MODEL 700
BARREL: 25½", 1 in 14" TWIST
CASE: NORMA
PRIMER: RWS

BULLET DIAMETER: .358"
MAXIMUM C.O.L.: 3.280"
MAX. CASE LENGTH: 2.519"
CASE TRIM LENGTH: 2.509"

Norma of Sweden has paid particular attention to the U.S. reloading market and to the American handloader as a trend maker. By providing cases for foreign military surplus rifles, the firm has helped popularize them and make them useful as sporting arms. But Norma has also taken the initiative in the American ammunition market by introducing entirely new cartridges such as the 358 Norma Magnum. In 1959, Norma announced this new and powerful cartridge and made cases and chambering specifications available for it. U.S. gunsmiths and reloaders accepted both and thereby started the 358 NM on its way. Factory chambered European rifles entered the U.S. market in 1960, and Norma ammunition for this cartridge is available.

The 358 Norma Magnum is a short magnum which will work through standard length bolt actions such as the Model 70, the Mauser Model '98, and the Springfield. Actions with locking lugs in the rear, however, are a poor choice for use with such a powerful cartridge.

The 358 Norma Magnum comes very close to the potency of the 375 H&H Magnum. The 250 grain Hornady bullets are outstanding and popular for this magnum, making it useful for all North American game species and many of the African animals.

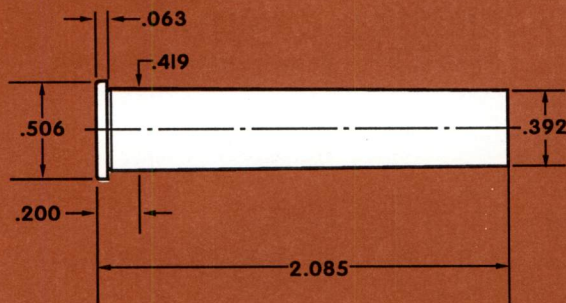
200 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.223**
.358"**#3510 SP****Ballistic Coefficient — .282**
C.O.L. — 3.140"**#3515 RN****Ballistic Coefficient — .195**
C.O.L. — 3.110"

POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	53.2 gr.	55.7 gr.	58.2 gr.	60.7 gr.	
H4895		58.7 gr.	61.1 gr.	63.5 gr.	65.9 gr.
IMR 4064	57.4 gr.	59.7 gr.	62.0 gr.	64.3 gr.	66.5 gr.
IMR 4320		60.6 gr.	63.2 gr.	65.7 gr.	68.3 gr.
H380	59.7 gr.	62.4 gr.	65.1 gr.	67.8 gr.	
IMR 4350	66.9 gr.	68.7 gr.	70.6 gr.	72.5 gr.	74.4 gr.

*See Ballistics Tables on pages 185-187, 187-189, Vol. II***250 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.279**
.358"**#3520 SP****Ballistic Coefficient — .375**
C.O.L. — 3.303"**#3525 RN****Ballistic Coefficient — .271**
C.O.L. — 3.280"

POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	54.0 gr.	56.7 gr.	59.5 gr.	62.2 gr.	
H4895	55.7 gr.	58.4 gr.	61.0 gr.	63.7 gr.	66.4 gr.
IMR 4064	57.2 gr.	59.7 gr.	62.2 gr.	64.7 gr.	
IMR 4320	58.4 gr.	60.9 gr.	63.3 gr.	65.8 gr.	68.3 gr.
IMR 4350	64.3 gr.	66.7 gr.	69.1 gr.	71.5 gr.	74.0 gr.
H450	68.1 gr.	71.0 gr.	73.8 gr.	76.7 gr.	

See Ballistics Tables on pages 189-191, 191-193, Vol. II



38-55 WINCHESTER/BALLARD

TEST RIFLE: WINCHESTER M94
 BARREL: 16", 1 in 18 TWIST
 CASES: WINCHESTER
 PRIMER: WINCHESTER WLR

BULLET DIAMETER: .375"
 MAXIMUM C.O.L.: 2.621"
 MAX. CASE LENGTH: 2.085"
 CASE TRIM LENGTH: 2.065"

Introduced in 1884 by Marlin for their Ballard rifle (hence the synonym 38-55 Ballard), this cartridge has had a long and interesting life. Originally a black powder round, it successfully made the transition to smokeless propellants. Many fine target rifles were made for these cartridges as were hunting arms. However, due to its age and the large variety of firearms chambered for this cartridge, many modern loads should not be fired in older, weaker designs. *This data is only to be used in Winchester Model 94's.*

Initially loaded with a 255 grain bullet at 1320 fps, ammunition manufacturers offered a high velocity load at 1590 fps, later followed by a high power load at 1700 fps with 1630 foot pounds of energy. These last two offerings should only be fired in newer, strong firearms, suitable for this data.

The 38-55 is an effective deer and black bear cartridge. It compares very favorably to other classic lever arm cartridges such as the 30-30 Winchester, the 32 Winchester Special or the 35 Remington.

Accuracy with our rifle was fine for its purpose. However, some 38-55's have slightly oversize bores and while safe, accuracy may suffer.

The 220 grain Hornady flat point bullet is ideal for this cartridge and its slightly larger brother, the 375 Winchester. Expansion is good and the Interlock construction assures good penetration. Velocity in longer barreled guns will be higher but not as high as expected in higher pressure cartridges. Expect an increase of 20-25 fps per inch for the first 4 inch increase in length and less increase for longer barrels.

220 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .375"

3705 FP

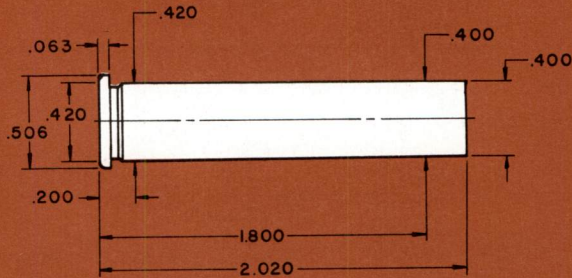
Ballistic Coefficient — .217
C.O.L. — 2.621"



POWDER	VELOCITY					
	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps
IMR 4198	24.6 gr.	25.2 gr.	25.8 gr.	26.4 gr.		
RL-7	29.6 gr.	30.1 gr.	30.5 gr.	31.0 gr.	31.5 gr.	31.9 gr.
IMR 3031	29.9 gr.	30.9 gr.	31.8 gr.	32.8 gr.	33.7 gr.	34.7 gr.
Scot 3032	33.0 gr.	34.2 gr.	35.4 gr.			

See Ballistics Tables on pages 193-195, Vol. II

 Indicates maximum load • use with caution



375 WINCHESTER

RIFLE: WINCHESTER "BIG BORE 94"
BARREL: 20", 1 in 12" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .375"
MAXIMUM C.O.L.: 2.560"
MAX. CASE LENGTH: 2.020"
CASE TRIM LENGTH: 2.010"

The 375 Winchester, new in 1978, was introduced by Winchester in a heavy duty version of their Model 94 lever action rifle. This new round, developed by Winchester, yields ballistics comparable to the 35 Remington. The 375 is a fine choice for deer and black bear at short range and in heavy cover. The 375 Winchester case is only slightly shorter than the old 38-55 Winchester round but under no circumstances should 375 Winchester cartridges be fired in the 38-55. Working pressures for the 375 Winchester greatly exceed those of the 38-55.

When the 375 Winchester was introduced, factory ammunition was loaded with 200 and 250 grain bullets. Hornady designed a 220 grain Flat Point bullet expressly for the 375 Winchester, filling the gap. It sacrifices little velocity over the 200 grain load and is substantially faster than the 250 grain load with flatter trajectory. The Interlock design insures expansion and deep penetration. During testing, 100 yard groups of 2½" were the best obtainable. This type of accuracy is all that is really necessary for the short range at which this cartridge should be used. Reloder 7 produced the best accuracy and uniformity in our firearm and also the highest velocity.

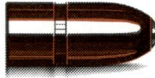
200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP
Ballistic Coefficient — .282
C.O.L. — 2.725"



#3515 RN
Ballistic Coefficient — .195
C.O.L. — 2.695"

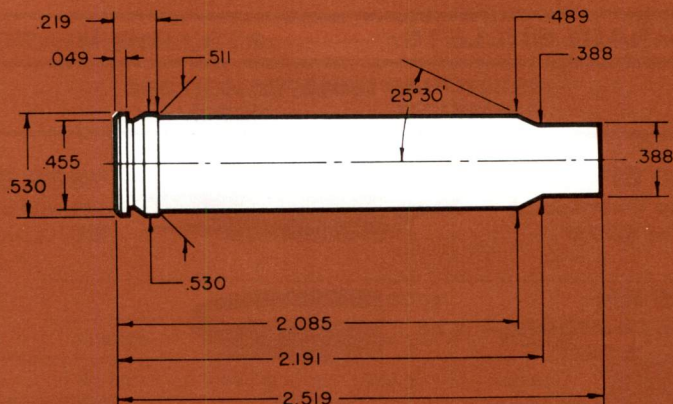


POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H4198		35.5 gr.	37.2 gr.	38.9 gr.	40.6 gr.
IMR 3031		39.5 gr.	41.3 gr.	43.1 gr.	44.9 gr.
H4895		41.9 gr.	44.1 gr.	46.4 gr.	48.7 gr.
IMR 4064		42.9 gr.	44.7 gr.	46.6 gr.	48.5 gr.
BL-C2		42.9 gr.	45.5 gr.	48.2 gr.	
IMR 4320		43.1 gr.	45.6 gr.	48.1 gr.	50.6 gr.
WIN 748	41.8 gr.	44.7 gr.	47.7 gr.	50.7 gr.	53.7 gr.
H380	43.3 gr.	46.2 gr.	49.0 gr.		

See Ballistics Tables on pages 185-187, 187-189, Vol. II

Indicates maximum load • use with caution

358 WINCHESTER



358 NORMA MAGNUM

RIFLE: REMINGTON MODEL 700
BARREL: 25½", 1 in 14" TWIST
CASE: NORMA
PRIMER: RWS

BULLET DIAMETER: .358"
MAXIMUM C.O.L.: 3.280"
MAX. CASE LENGTH: 2.519"
CASE TRIM LENGTH: 2.509"

Norma of Sweden has paid particular attention to the U.S. reloading market and to the American handloader as a trend maker. By providing cases for foreign military surplus rifles, the firm has helped popularize them and make them useful as sporting arms. But Norma has also taken the initiative in the American ammunition market by introducing entirely new cartridges such as the 358 Norma Magnum. In 1959, Norma announced this new and powerful cartridge and made cases and chambering specifications available for it. U.S. gunsmiths and reloaders accepted both and thereby started the 358 NM on its way. Factory chambered European rifles entered the U.S. market in 1960, and Norma ammunition for this cartridge is available.

The 358 Norma Magnum is a short magnum which will work through standard length bolt actions such as the Model 70, the Mauser Model '98, and the Springfield. Actions with locking lugs in the rear, however, are a poor choice for use with such a powerful cartridge.

The 358 Norma Magnum comes very close to the potency of the 375 H&H Magnum. The 250 grain Hornady bullets are outstanding and popular for this magnum, making it useful for all North American game species and many of the African animals.

220 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .375"

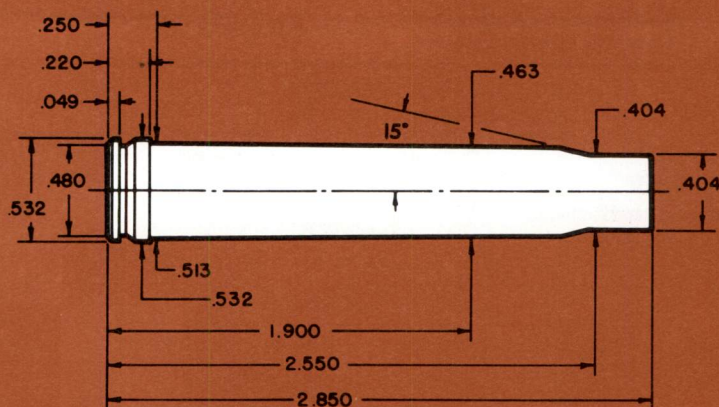
#3705 FP
Ballistic Coefficient — .217
C.O.L. — 2.450"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	28.0 gr.	30.1 gr.	32.2 gr.		
RL-7	31.1 gr.	32.8 gr.	34.5 gr.	36.2 gr.	38.0 gr.
IMR 3031	34.0 gr.	35.2 gr.			
H322	34.8 gr.	36.7 gr.	38.6 gr.		

See Ballistics Tables on pages 193-195, Vol. II

375 WINCHESTER



375 H&H MAGNUM

RIFLE: WINCHESTER MODEL 70
BARREL: 25", 1 in 12" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .375"
MAXIMUM C.O.L.: 3.600"
MAX. CASE LENGTH: 2.850"
CASE TRIM LENGTH: 2.840"

Introduced by Holland and Holland in 1912, the 375 H&H Magnum actually started a number of events. First and foremost, it was (and still is!) a flexible, accurate, flat shooting cartridge suitable for medium to large game, with acceptable recoil. In short, a good all around African cartridge, although a bit large for American usage. It has, however, found considerable use by Americans hunting elk, moose, and the large bears. Secondly, it was the second cartridge ever to feature a belt, designed for headspace control. In theory, it was to feed smoothly from the box magazine of a bolt action rifle, yet keep the positive headspacing of a rimmed cartridge. No Magnum cartridge today would be without this belt, although some today feel it is not really necessary. Thirdly, the 375 H&H Magnum case was the basis for most magnum cartridges today.

While many "short magnum" cartridges introduced in the 50's, 60's and 70's may have hurt the popularity of the 375 H&H it is still very much alive, and it is unlikely another cartridge will be developed that could take its place.

Shown are several loads for the Hornady 220 grain Flat Point, a good choice for deer hunting. These reduced loads duplicate the 375 Winchester cartridge for which the bullet was designed. Higher velocity loads are also listed for the Hornady 220 grain Flat Point. This bullet, however, will expand rapidly at impact velocities above 2000 fps. Reloder 15 worked very well with the 270 grain Spire Point, providing good velocity and trajectory. Winchester 760 is an excellent choice with the 300 grain bullets. The 300 grain BTSP provides excellent accuracy, good trajectory and plenty of down range energy.

220 GRAIN BULLETS:

SECTIONAL DENSITY:	.223
DIAMETER:	.375"

#3705 FP

Ballistic Coefficient — .217
C.O.L. — 3.350"



REDUCED LOAD

POWDER	VELOCITY			
	2000 fps	2100 fps	2200 fps	2300 fps
SR 4759	34.4 gr.	36.9 gr.	39.4 gr.	42.0 gr.
H4227	35.6 gr.	38.1 gr.		

See Ballistics Tables on pages 193-195, Vol. II

220 GRAIN BULLETS:

SECTIONAL DENSITY:	.223
DIAMETER:	.375"

#3705 FP

Ballistic Coefficient — .217
C.O.L. — 3.350"



POWDER	VELOCITY			
	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4064	64.4 gr.	67.2 gr.	70.0 gr.	72.8 gr.
RL-15	67.6 gr.	69.9 gr.	72.2 gr.	74.5 gr.
H4895	64.3 gr.	67.8 gr.	71.3 gr.	74.8 gr.

See Ballistics Tables on pages 193-195, Vol. II

Indicates maximum load • use with caution

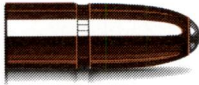
270 GRAIN BULLETS:

SECTIONAL DENSITY:	.274
DIAMETER:	.375"

#3710 SP
Ballistic Coefficient — .380
C.O.L. — 3.585"



#3715 RN
Ballistic Coefficient — .253
C.O.L. — 3.605"



POWDER	VELOCITY					
	2400 fps	2500 fps	2550 fps	2600 fps	2650 fps	2700 fps
IMR 4064	62.1 gr.	66.1 gr.	68.1 gr.	70.2 gr.		
RL-15	64.3 gr.	67.6 gr.	69.2 gr.	70.9 gr.	72.5 gr.	74.0 gr.
H4895	64.9 gr.	68.5 gr.	70.3 gr.	72.1 gr.	73.9 gr.	
Scot 4065	70.9 gr.	73.4 gr.	74.7 gr.	75.9 gr.		
H414	74.9 gr.	77.1 gr.	78.2 gr.	79.3 gr.	80.4 gr.	
WIN 760	74.2 gr.	77.2 gr.	78.7 gr.	80.2 gr.	81.7 gr.	

See Ballistics Tables on pages 195-197, 197-199, Vol. II

 Indicates maximum load • use with caution

300 GRAIN BULLETS:

SECTIONAL DENSITY: .305
DIAMETER: .375"

#3720 RN
Ballistic Coefficient — .250
C.O.L. — 3.560"



#3725 BTSP
Ballistic Coefficient — .460
C.O.L. — 3.560"

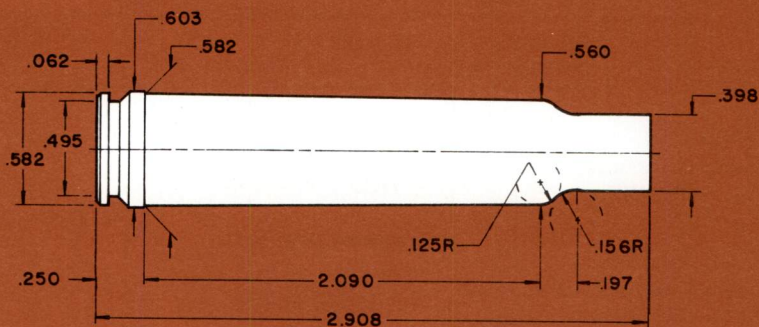


#3727 FMJ-RN
Ballistic Coefficient — .275
C.O.L. — 3.560"



POWDER	Velocity			
	2300 fps	2400 fps	2500 fps	2550 fps
IMR 3031	58.5 gr.	61.8 gr.	65.0 gr.	
IMR 4064	62.2 gr.	65.2 gr.	68.1 gr.	
H4895	63.3 gr.	66.2 gr.	69.2 gr.	70.6 gr.
WIN 760	69.2 gr.	72.8 gr.	76.5 gr.	78.3 gr.
IMR 4350	71.3 gr.	74.2 gr.	77.2 gr.	
Scot 4351	72.4 gr.	75.3 gr.	78.1 gr.	

See Ballistics Tables on pages 199-201, 201-203, 203-205, 249-250, Vol. II



378 WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 26", 1 in 12" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .375"
MAXIMUM C.O.L.: 3.645"
MAX. CASE LENGTH: 2.908"
CASE TRIM LENGTH: 2.898"

The huge 378 Weatherby Magnum holds well over 100 grains of powder and can propel a 270 grain 375 caliber Hornady Bullet at 3100 fps and a 300 grain Hornady at 2900 fps producing muzzle energies of 5763 ft.-lbs. and 5604 ft.-lbs. respectively. That's power, ample power for the hunter to take on the very largest, toughest, and most dangerous game of the world. Because of its high velocity and flat trajectory, the 378 Weatherby Magnum is a far better long range performer than powerful big bores up to the 460 Weatherby. Flat shooting and hard hitting, it can be used effectively for hunting where local game laws permit the use of sub-40 caliber rifles on the largest species. However, this ballistic performance results in substantial recoil. Hardly a problem for hunters, it can be challenging when shot from a bench during sighting in.

The 378 WM has considerably more capacity and velocity potential than the earlier 375 Weatherby Magnum, a cartridge developed by blowing out and improving the 375 H&H Magnum case. The Weatherby 378 caliber offering is a Weatherby original, and is based on the same case as their enormous, powerful 460 cartridge.

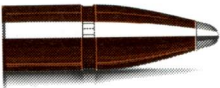
Weatherby factory ammunition is loaded with Hornady 375 caliber bullets, including the tough and extremely effective 300 grain FMJ, the bullet needed for penetrating through tough hide to the vital areas of elephant, rhino, and Cape buffalo.

270 GRAIN BULLETS:

SECTIONAL DENSITY:	.274
DIAMETER:	.375"

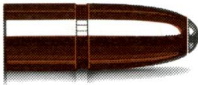
#3710 SP

Ballistic Coefficient — .380
C.O.L. — 3.625"



#3715 RN

Ballistic Coefficient — .253
C.O.L. — 3.645"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3050 fps	3100 fps
IMR 3031	82.2 gr.	86.8 gr.			
IMR 4064	86.5 gr.	90.8 gr.			
H4895	87.2 gr.	91.2 gr.	95.2 gr.		
IMR 4320	85.8 gr.	90.6 gr.	95.4 gr.	97.8 gr.	
IMR 4350	99.2 gr.	102.1 gr.	105.0 gr.	106.4 gr.	107.9 gr.
H4831	103.0 gr.	106.2 gr.	109.4 gr.	111.0 gr.	112.6 gr.
H450	102.9 gr.	106.3 gr.	109.8 gr.	111.4 gr.	113.2 gr.

See Ballistics Tables on pages 195-197, 197-199, Vol. II

300 GRAIN BULLETS:

SECTIONAL DENSITY: .305
DIAMETER: .375"

#3720 RN
Ballistic Coefficient — .250
C.O.L. — 3.635"



#3725 BTSP
Ballistic Coefficient — .460
C.O.L. — 3.635"



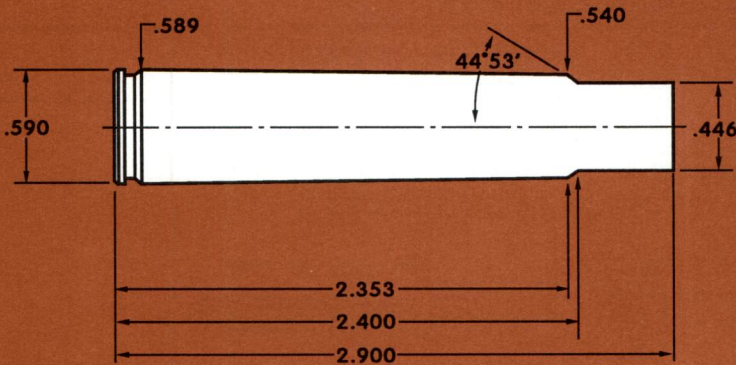
#3727 FMJ-RN
Ballistic Coefficient — .275
C.O.L. — 3.575"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps
IMR 3031	78.1 gr.	82.0 gr.	85.9 gr.		
IMR 4064	81.0 gr.	85.3 gr.	89.5 gr.		
H4895	81.0 gr.	85.3 gr.	89.5 gr.		
IMR 4320	82.1 gr.	86.7 gr.	91.4 gr.	93.7 gr.	
IMR 4350	95.1 gr.	97.9 gr.	100.6 gr.	101.9 gr.	103.3 gr.
H4831	98.2 gr.	101.2 gr.	104.2 gr.	105.7 gr.	107.2 gr.
H450	97.0 gr.	100.6 gr.	104.2 gr.	106.0 gr.	107.8 gr.

See Ballistics Tables on pages 199-201, 201-203, 203-205, 249-250, Vol. II

 Indicates maximum load • use with caution



416 RIGBY

TEST RIFLE: DAKOTA ARMS M 76
BARREL: 24", 1 in 14" TWIST
CASE: FEDERAL
PRIMER: FEDERAL 215

BULLET DIAMETER: .416"
MAXIMUM C.O.L.: 3.750"
MAX. CASE LENGTH: 2.900"
CASE TRIM LENGTH: 2.880"

Introduced by the John Rigby rifle company in 1911, the 416 Rigby is a successful and well known big game cartridge. Perhaps its best known advocate was John Taylor who used it for many years in the golden era of African elephant hunting. Classified by the British as a medium bore, to quote Taylor, "It's an essentially African weapon. Firing its plain soft-nose slug it crumples a charging lion as few other weapons are capable of doing." Need more be said? The 416 Rigby was reintroduced (along with other 416's) as a factory cartridge by Federal and chambered by Ruger in their Model 77 though it had always been available in custom rifles. Dakota Arms Model 76 was our choice of test rifles and was readily available.

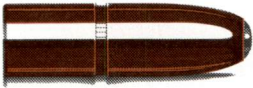
Those who hunt the large, dangerous bears of Alaska and Canada might find it a wonderful, confidence inspiring cartridge.

Original ballistics were a 410 grain bullet (soft point or full metal jacket) at a muzzle velocity of 2,350 fps and muzzle energy of 5,000 foot pounds.

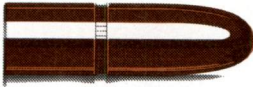
400 GRAIN BULLETS:

SECTIONAL DENSITY:	.330
DIAMETER:	.416"

#4165 RN
Ballistic Coefficient — .311
C.O.L. — 3.605"



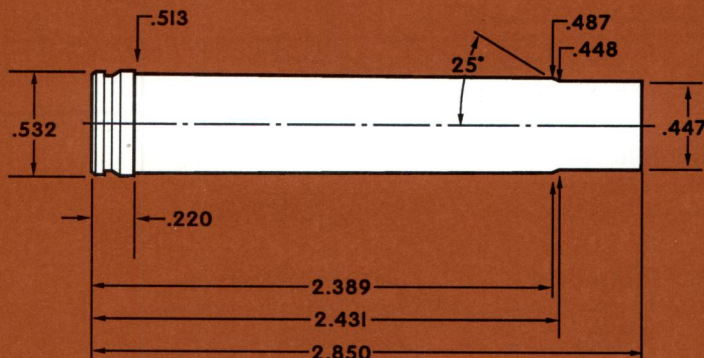
#4167 FMJ-RN
Ballistic Coefficient — .319
C.O.L. — 3.605"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2350 fps	2400 fps
IMR 4350	83.7 gr.	86.3 gr.	88.9 gr.	90.2 gr.	91.5 gr.
Scot 4351	85.0 gr.	87.8 gr.	90.6 gr.		
IMR 4831	87.7 gr.	90.1 gr.	92.5 gr.	93.7 gr.	
H4350	89.1 gr.	92.1 gr.	95.1 gr.	96.6 gr.	98.1 gr.
AA 3100	88.7 gr.	92.7 gr.	96.7 gr.	98.7 gr.	100.7 gr.
RL-22	88.9 gr.	93.0 gr.	97.0 gr.	99.1 gr.	
IMR 7828	94.1 gr.	97.5 gr.	100.8 gr.		
H4831	94.3 gr.	98.3 gr.	102.4 gr.		

See Ballistics Tables on pages 205-206, 206-207, Vol. II

 Indicates maximum load • use with caution



416 REMINGTON

TEST RIFLE: REMINGTON M 700

BARREL: 24", 1 in 14" TWIST

CASE: REMINGTON

PRIMER: REMINGTON 9½ MAG

BULLET DIAMETER: .416"

MAXIMUM C.O.L.: 3.600"

MAX. CASE LENGTH: 2.850"

CASE TRIM LENGTH: 2.840"

The .416" bullet was introduced to the hunting world by the firm of John Rigby. This bullet diameter, considered a "medium bore" by the British, nicely fills the gap between the 375 and the 45 calibers. The 416 Rigby cartridge performed well in Africa and attracted many hunters. Several wildcat 416s came into being including the 416 Taylor and 416 Hoffman. Remington entered the 416 race in 1988 with the 416 Remington Magnum, a cartridge very similar to the Hoffman wildcat. However similar, these cartridges should not be interchanged.

The 416 Remington case is based on their 8mm Magnum case, essentially an improved 375 H&H case. This provides ample powder capacity to propel the 400 grain bullet to 2400 fps in our test rifle, a Remington Model 700 Safari grade, equipped with a 24" barrel.

While appearing to be strictly an African caliber, it will find considerable use in hunting the large bears, moose and even elk in North America. Accuracy is good and recoil is manageable, being less than the 458 Winchester Magnum.

No one can predict which of the 416 cartridges will become most popular, but the ready availability of cases and the excellent Model 700 rifle will certainly help the 416 Remington.

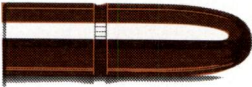
400 GRAIN BULLETS:

SECTIONAL DENSITY: .330
DIAMETER: .416"

#4165 RN
Ballistic Coefficient — .311
C.O.L. — 3.585"



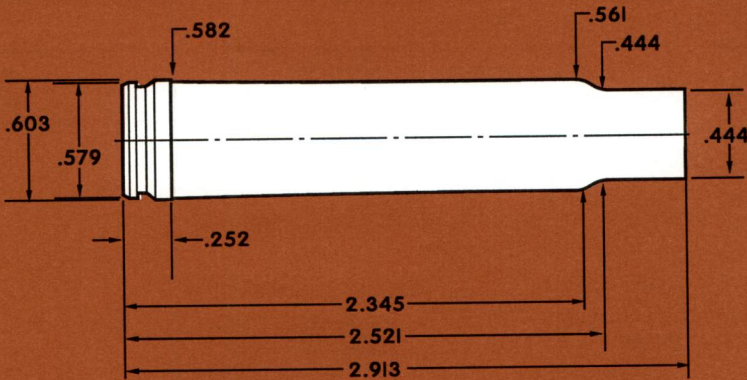
#4167 FMJ-RN
Ballistic Coefficient — .319
C.O.L. — 3.585"



POWDER	VELOCITY					
	2150 fps	2200 fps	2250 fps	2300 fps	2350 fps	2400 fps
IMR 4895		69.6 gr.	71.3 gr.	73.1 gr.	74.8 gr.	76.6 gr.
AA 2520		69.9 gr.	72.1 gr.	74.2 gr.	76.3 gr.	78.5 gr.
IMR 4064	70.1 gr.	71.7 gr.	73.3 gr.	74.9 gr.	76.5 gr.	78.1 gr.
RL-15	70.4 gr.	72.0 gr.	73.6 gr.	75.1 gr.	76.7 gr.	78.3 gr.
IMR 4350	76.1 gr.	79.7 gr.	81.5 gr.	83.3 gr.	85.1 gr.	
WIN 760		79.9 gr.	82.0 gr.	84.2 gr.	86.3 gr.	88.4 gr.

See Ballistics Tables on pages 205-206, 206-207, Vol. II

 Indicates maximum load • use with caution



416 WEATHERBY

RIFLE: WEATHERBY MARK V
BARREL: 24, 1 in 14" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .416"
MAXIMUM C.O.L.: 3.780"
MAX. CASE LENGTH: 2.913"
CASE TRIM LENGTH: 2.903"

The 416 caliber may be the big game caliber of the 90s. Of the three versions available, the 416 Weatherby is the largest, and accordingly the fastest and most powerful. The 416 Weatherby was developed from the same case used for their 378 and 460 cartridges. Factory ammunition uses a 400 grain bullet, propelled a bit over 2700 fps, producing over 6,600 foot pounds of energy. This is clearly more than sufficient for anything in North America, and easily enough for any African species. Recoil, while not light, is manageable with some practice. Some shooters may choose to purchase the rifle with the optional muzzle brake which does reduce recoil.

Good results were obtained with RL-19 and IMR 4831 powders.

400 GRAIN BULLETS:

SECTIONAL DENSITY:	.330
DIAMETER:	.416"

#4165 RN
Ballistic Coefficient — .311
C.O.L. — 3.780"



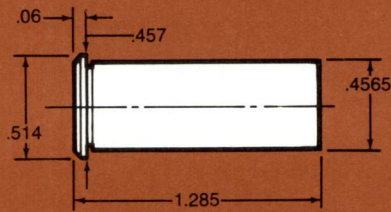
#4167 FMJ-RN
Ballistic Coefficient — .319
C.O.L. — 3.780"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4831	95.2 gr.	99.1 gr.	103.0 gr.	106.9 gr.	110.8 gr.
RL-19		100.0 gr.	104.2 gr.	108.4 gr.	112.6 gr.
AA 3100		100.5 gr.	105.4 gr.	110.4 gr.	115.4 gr.
H4350	97.9 gr.	101.8 gr.	105.8 gr.	109.7 gr.	
H450			106.4 gr.	112.9 gr.	119.4 gr.
RL-22		102.5 gr.	106.8 gr.	111.1 gr.	115.4 gr.
IMR 7828	102.8 gr.	107.6 gr.	112.4 gr.	117.2 gr.	

See Ballistics Tables on pages 205-206, 206-207, Vol. II

 Indicates maximum load • use with caution



44 REMINGTON MAGNUM (RIFLE)

RIFLE: RUGER CARBINE
BARREL: 18", 1 in 38" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 1.610"
MAX. CASE LENGTH: 1.285"
CASE TRIM LENGTH: 1.275"

The 44 Remington Magnum dates back to 1955 when it was introduced as a handgun cartridge. The cartridge was originally chambered in the heavy frame Smith and Wesson Model 29 followed a short time later by Ruger in their Super Blackhawk. Because of the popularity of having a sidearm and a rifle of the same caliber, Ruger later introduced the 44 Magnum auto-loading carbine, while Winchester, Browning, and Marlin have produced lever action rifles.

The light, fast handling Ruger Carbine and the various lever actions in 44 Magnum makes a handy gun for hunting wooded areas. The following loads listed should not be reduced; any reduction may result in improper functioning of the gas operated Ruger. It is also imperative that loads for all rifles be kept at near maximum charges to insure uniform results from the slower burning powders listed.

All the powders gave commendable results in our carbine, with IMR 4227 being the most uniform. The Hornady 265 grain Flat Point or the 300 grain HP/XTP are the best choices for deer or black bear at short ranges, while the 200 grain Jacketed Hollow Point and 240 grain Jacketed Hollow Point are better suited for smaller game.

200 GRAIN BULLETS:

SECTIONAL DENSITY: .155
DIAMETER: .430"

#44100 HP/XTP
Ballistic Coefficient — .170
C.O.L. — 1.590"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	21.5 gr.	22.8 gr.	24.2 gr.		
H110			24.6 gr.	26.3 gr.	28.0 gr.
WIN 296		25.2 gr.	26.8 gr.	28.5 gr.	
IMR 4227	24.3 gr.	25.8 gr.	27.4 gr.		

See Ballistics Tables on pages 342-345, 425-426, Vol. II

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#44200 HP/XTP
Ballistic Coefficient — .205
C.O.L. — 1.610"



POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
2400	18.5 gr.	20.0 gr.	21.5 gr.	23.0 gr.	
H110		20.5 gr.	22.0 gr.	23.5 gr.	25.0 gr.
WIN 296	20.3 gr.	21.8 gr.	23.3 gr.	24.7 gr.	
IMR 4227	21.6 gr.	23.1 gr.	24.5 gr.		

See Ballistics Tables on pages 346-349, 426-427, Vol. II

 Indicates maximum load • use with caution

265 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .430"

#4300 FP

Ballistic Coefficient — .189
C.O.L. — 1.610"



POWDER	VELOCITY				
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps
2400	16.2 gr.	17.6 gr.	19.0 gr.	20.4 gr.	
H110		18.3 gr.	19.6 gr.	20.9 gr.	22.2 gr.
WIN 296	17.7 gr.	19.1 gr.	20.6 gr.	22.0 gr.	
IMR 4227	18.9 gr.	20.3 gr.	21.8 gr.	23.3 gr.	

See Ballistics Tables on pages 207-208, Vol. II

300 GRAIN BULLETS:

SECTIONAL DENSITY: .232
DIAMETER: .430"

#44280 HP/XTP

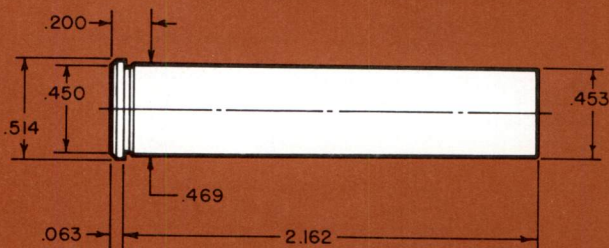
Ballistic Coefficient — .245
C.O.L. — 1.600"



POWDER	VELOCITY				
	1200	1300 fps	1400 fps	1500 fps	1550 fps
AA #9		14.6 gr.	15.9 gr.	17.2 gr.	17.9 gr.
2400	15.3 gr.	16.4 gr.	17.5 gr.		
H110	16.1 gr.	17.5 gr.	18.8 gr.	20.1 gr.	
WIN 296	16.6 gr.	17.9 gr.	19.2 gr.	20.4 gr.	

See Ballistics Tables on pages 352-353, 428-429, Vol. II

Indicates maximum load • use with caution



444 MARLIN

RIFLE: MARLIN 336
BARREL: 24", 1 in 38" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 9½

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 2.580"
MAX. CASE LENGTH: 2.225"
CASE TRIM LENGTH: 2.215"

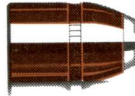
The 444 Marlin is a big, cylindrical, semi-rimmed case which Remington factory loads with a 240 grain bullet to a velocity of 2400 fps and a 265 grain flat point at 2200 fps. At the muzzle the 444 develops 930 fps more velocity than the 44 Remington Magnum — and over twice the energy. The 444 is a lot more cartridge than the 44 Magnum, though due to its trajectory, it is still a short to moderate range round at its best for hunting in brush. Its power makes it useful for most North American game hunted within its effective range.

The 444 Marlin cartridge first appeared in 1964 chambered in that firm's popular Model 336 lever action. Winchester in 1958 had ceased manufacturing its Model 71 in 348 caliber, and Marlin's new offering thus became the largest caliber lever action repeater available. (Marlin bested this accomplishment in 1972 when it produced its Model 1895 in 45-70 caliber.)

In 1967 Hornady introduced a bullet expressly designed for the 444 Marlin, a 44 caliber (.430") 265 grain Flat Point now made with our Interlock construction. The blunt shape of this bullet is ideally suited to the 336's tubular magazine, accuracy in the lever action is highly satisfactory, and the optimum expansion characteristics of the bullet have helped it earn a deadly reputation as a game-stopper. The new XTP design 300 grain hollow point fills the demand of a heavier bullet for the 444 Marlin. Although lighter bullets than listed could be used in the 444, the velocities obtained cause these bullets to expand violently. As this cartridge is primarily a hunting cartridge of medium to large game, lighter bullets are not generally recommended. Also, full metal jacket bullets should not be used in rifles with a tubular magazine.

240 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.185**
.430"**#44200 HP/XTP****Ballistic Coefficient — .205**
C.O.L. — 2.550"

POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
IMR 4198	36.9 gr.	39.3 gr.	41.8 gr.	44.2 gr.	46.6 gr.
H4198	40.5 gr.	42.5 gr.	44.5 gr.	46.5 gr.	48.5 gr.
RL-7	41.1 gr.	43.2 gr.	45.4 gr.	47.5 gr.	49.6 gr.
H322	44.4 gr.	46.7 gr.	48.9 gr.	51.1 gr.	53.4 gr.
Scot 4197	45.5 gr.	47.7 gr.	49.9 gr.	52.2 gr.	
H335	52.8 gr.	54.8 gr.	56.7 gr.	58.6 gr.	

*See Ballistics Tables on pages 346-349, 426-427, Vol. II***265 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.205**
.430"**#4300 FP****Ballistic Coefficient — .189**
C.O.L. — 2.580"

POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	32.3 gr.	34.9 gr.	37.5 gr.	40.1 gr.	42.7 gr.	
H4198	36.7 gr.	38.8 gr.	40.9 gr.	42.9 gr.	45.0 gr.	47.1 gr.
RL-7	36.3 gr.	38.6 gr.	40.9 gr.	43.2 gr.	45.5 gr.	47.8 gr.
Scot 4197	40.7 gr.	43.0 gr.	45.3 gr.	47.6 gr.	49.9 gr.	
H322	41.6 gr.	43.6 gr.	45.6 gr.	47.7 gr.	49.7 gr.	51.7 gr.
IMR 4895	45.6 gr.	47.9 gr.	50.2 gr.	52.5 gr.	54.8 gr.	
H335	47.3 gr.	49.8 gr.	52.3 gr.	54.8 gr.	57.4 gr.	

See Ballistics Tables on pages 207-208, Vol. II **Indicates maximum load • use with caution**

300 GRAIN BULLETS:

SECTIONAL DENSITY: .232
DIAMETER: .430"

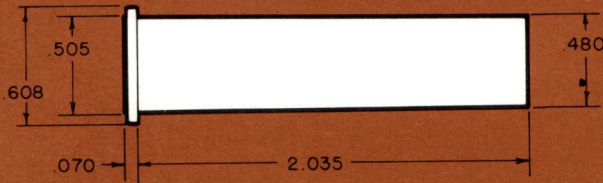
#44280 HP/XTP
Ballistic Coefficient — .245
C.O.L. — 2.550"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
IMR 4198	34.6 gr.	36.7 gr.	38.9 gr.	41.0 gr.	43.1 gr.
RL-7	37.2 gr.	39.1 gr.	41.1 gr.	43.1 gr.	45.0 gr.
Scot 4197	40.4 gr.	42.4 gr.	44.5 gr.	46.6 gr.	
H322	40.5 gr.	42.6 gr.	44.8 gr.	46.9 gr.	49.0 gr.
IMR 4895	45.7 gr.	47.9 gr.	50.2 gr.	52.4 gr.	
H335	48.2 gr.	50.0 gr.	51.9 gr.	53.7 gr.	55.6 gr.

See Ballistics Tables on pages 352-353, 428-429, Vol. II

 Indicates maximum load • use with caution



45-70 (TRAP DOOR)

RIFLE: SPRINGFIELD 1873
BARREL: 29½", 1 in 23" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 2.550"
MAX. CASE LENGTH: 2.105"
CASE TRIM LENGTH: 2.095"

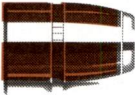
The following data is to be used in such rifles as the 1873 Springfield "Trap Door" rifle, H & R "Shikari", 1886 Winchester, Rolling Block 45-70's, and all other rifles of similar construction. The data represented here did not exceed 25,000 c.u.p. in our pressure barrel.

For the older rifles we have included only our 300 grain Jacketed Hollow Point; this bullet is constructed to expand properly at their lower velocities. We recommend the use of slower burning powders to keep the case more nearly filled and pressures low. When using Pyrodex, it is the recommendation of that firm that the case be full or slightly compressed for adequate ignition; it is for this reason that only two increments are shown.

300 GRAIN BULLETS:

SECTIONAL DENSITY: .204
DIAMETER: .458"

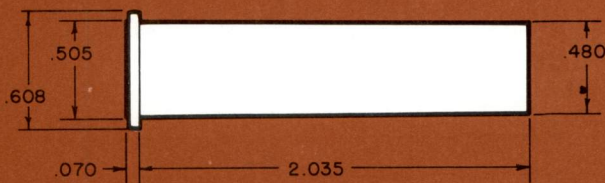
#4500 HP
Ballistic Coefficient — .197
C.O.L. — 2.550"



POWDER	VELOCITY						
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
SR 4759	25.5 gr.	27.0 gr.	28.5 gr.	30.0 gr.	31.5 gr.	33.0 gr.	
IMR 4227	27.2 gr.	28.5 gr.	29.8 gr.	31.1 gr.	32.4 gr.	33.7 gr.	
IMR 4198	32.2 gr.	33.9 gr.	35.6 gr.	37.3 gr.	39.1 gr.	40.8 gr.	42.5 gr.
RL-7	31.6 gr.	33.9 gr.	36.3 gr.	38.6 gr.	41.0 gr.	43.3 gr.	45.7 gr.
H322			40.7 gr.	44.2 gr.	47.7 gr.	51.3 gr.	54.8 gr.
IMR 3031	40.9 gr.	43.1 gr.	45.3 gr.	47.6 gr.	49.8 gr.	52.0 gr.	
PYRODEX CTG.		52.1 gr.	56.4 gr.				

See Ballistics Tables on pages 209-210, Vol. II

 Indicates maximum load • use with caution



45-70 (1895)

RIFLE: MARLIN 1895
BARREL: 22", 1 in 20" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 2.555"
MAX. CASE LENGTH: 2.105"
CASE TRIM LENGTH: 2.095"

The following data is intended only for use in the Marlin Model 1895 and should not be used in antique 45-70's or replicas of these older designs. Pressures here are held to 40,000 c.u.p. maximum. This rifle is the same basic action as that of the 444 Marlin which operates at 40,000 c.u.p.

The Marlin 45-70 is a very reliable and functional North American big game rifle. It has sufficient energy for any North American game and most African game if used at close range.

The 1895 is shown with the 300 grain Hollow point and the 350 grain Round Nose, but not with the 500 grain Round Nose. The 500 grain Round Nose, when loaded to function through the magazine, has the bullet seated with the cannellure below the mouth of the case, which takes up too much case volume and allows no place for crimping. A good crimp is of utmost importance in a rifle with a tubular magazine and heavy recoil, such as the 45-70 Marlin.

Excellent accuracy and good uniformity were obtained with our rifle using IMR 4198 and IMR 3031. The 300 grain Hollow Point makes a good choice on deer while the 350 grain Round Nose is an excellent choice for anything from black bear to moose.

300 GRAIN BULLETS:

SECTIONAL DENSITY: .204
DIAMETER: .458"

#4500 HP
Ballistic Coefficient — .197
C.O.L. — 2.550"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
IMR 4198	35.8 gr.	38.4 gr.	41.0 gr.	43.6 gr.	46.2 gr.	48.7 gr.
H4198	42.3 gr.	44.6 gr.	46.8 gr.	49.0 gr.	51.2 gr.	
RL-7	44.7 gr.	46.6 gr.	48.5 gr.	50.4 gr.	52.3 gr.	
Scot 4197	48.0 gr.	50.0 gr.	52.0 gr.	54.0 gr.		
IMR 3031	50.2 gr.	52.4 gr.	54.7 gr.	56.9 gr.		

See Ballistics Tables on pages 209-210, Vol. II

350 GRAIN BULLETS:

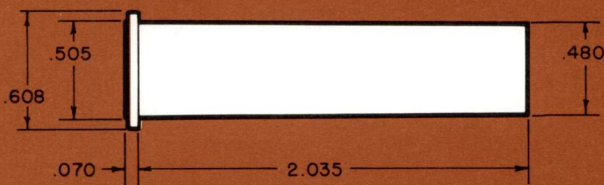
SECTIONAL DENSITY: .238
DIAMETER: .458"

#4502 RN
Ballistic Coefficient — .198
C.O.L. — 2.550"



POWDER	VELOCITY					
	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
IMR 4198	32.0 gr.	34.7 gr.	37.3 gr.	40.0 gr.	42.7 gr.	45.3 gr.
H4198	37.1 gr.	39.4 gr.	41.6 gr.	43.9 gr.	46.2 gr.	48.4 gr.
RL-7	38.3 gr.	40.6 gr.	42.9 gr.	45.2 gr.	47.5 gr.	49.8 gr.
Scot 4197	42.3 gr.	44.5 gr.	46.7 gr.	49.0 gr.	51.2 gr.	53.4 gr.
IMR 3031	45.2 gr.	47.4 gr.	49.6 gr.	51.7 gr.	53.9 gr.	56.1 gr.
IMR 4064	48.2 gr.	50.5 gr.	52.9 gr.	55.2 gr.	57.6 gr.	
H4895	50.2 gr.	52.2 gr.	54.2 gr.	56.2 gr.	58.3 gr.	

See Ballistics Tables on pages 210-212, Vol. II



45-70 (RUGER)

RIFLE: RUGER #1
BARREL: 22", 1 in 20" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 2.925"
MAX. CASE LENGTH: 2.105"
CASE TRIM LENGTH: 2.095"

WARNING: The following data is to be used in such actions as the Ruger #1, Browning 78, Wickliffe, and 45-70's chambered on the Siamese Mauser bolt action. This data has maximum charges that develop 50,000 c.u.p., as tested in the Hornady lab. Under no circumstances should these loads be used in any weaker action in the 25,000 c.u.p. class or less.

The 45-70 has been a popular sporting round since 1873, and with the advent of strong actions like the Ruger #1, its popularity has increased along with the usefulness of the cartridge. It is impossible for the ammunition manufacturers to produce rounds which utilize the full potential of these strong actions due to numerous antiques and antique replicas that remain in circulation. However, the handloader can produce every foot pound possible by using the correct powder-bullet combinations in his rifle, as listed here in the Hornady manual.

With the Hornady 500 grain Round Nose and IMR 3031, the Ruger #1 can produce velocities only 350 fps slower than the 458 Winchester. With this type of ballistics, the 45-70 Ruger can certainly take the largest game North America has to offer.

Should any reloader desire to use the 300 grain Hollow Point, data for the Marlin 1895 45-70 could be used.

350 GRAIN BULLETS:

SECTIONAL DENSITY: .238
DIAMETER: .458"

#4502 RN
Ballistic Coefficient — .189
C.O.L. — 2.550"



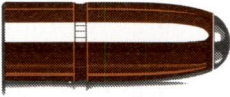
POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	42.2 gr.	44.4 gr.	46.6 gr.	48.9 gr.	51.1 gr.	53.3 gr.
RL-7	44.8 gr.	47.5 gr.	50.2 gr.	52.8 gr.	55.5 gr.	
IMR 3031	49.0 gr.	51.2 gr.	53.3 gr.	55.4 gr.	57.5 gr.	59.6 gr.
IMR 4895	51.2 gr.	54.2 gr.	57.2 gr.	60.1 gr.		
H322	52.9 gr.	55.4 gr.	57.9 gr.	60.4 gr.		
IMR 4064	55.2 gr.	57.9 gr.	60.5 gr.			

See Ballistics Tables on pages 210-212, Vol. II

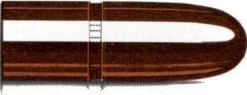
500 GRAIN BULLETS:

SECTIONAL DENSITY: .341
DIAMETER: .458"

#4504 RN
Ballistic Coefficient — .287
C.O.L. — 2.925"



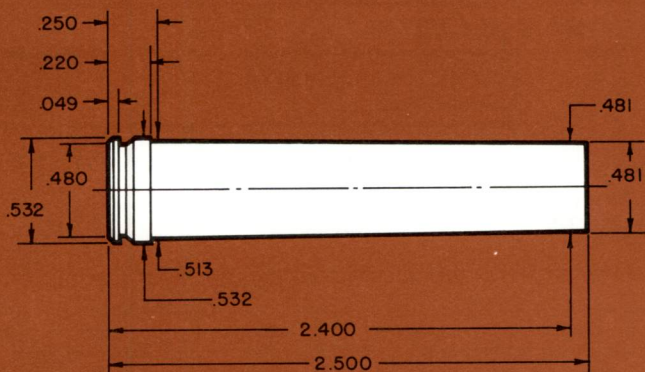
#4507 FMJ-RN
Ballistic Coefficient — .287
C.O.L. — 2.925"



POWDER	VELOCITY				
	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps
IMR 4198		39.1 gr.	41.9 gr.	44.8 gr.	47.6 gr.
RL-7	38.4 gr.	41.5 gr.	44.5 gr.		
IMR 3031		44.1 gr.	47.1 gr.	50.1 gr.	53.1 gr.
IMR 4895	45.1 gr.	47.8 gr.	50.5 gr.	53.2 gr.	
H322	45.5 gr.	48.3 gr.	51.2 gr.		
IMR 4064	46.3 gr.	49.2 gr.	52.1 gr.	55.0 gr.	

See Ballistics Tables on pages 212-214, 214-216, Vol. II

 Indicates maximum load • use with caution



458 WINCHESTER MAGNUM

RIFLE: WINCHESTER MODEL 70
BARREL: 25", 1 in 14" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 3.310"
MAX. CASE LENGTH: 2.500"
CASE TRIM LENGTH: 2.490"

In 1956 Winchester introduced the 458 in their Model 70 "African", a heavier and more stoutly constructed version of the Model 70 which would withstand the tremendous recoil this cartridge produces. This round was intended for large and dangerous African game, but has also found favor in North America for the big bears and moose.

The Hornady 500 grain Full Metal Jacket is ideal for such game as elephant or Cape buffalo, since muzzle energies of 5000 ft. lbs. plus are obtainable. The jacket of this bullet is drawn from .098" copper-clad steel to provide the needed penetration on heavy, thick-skinned game. The 350 grain Round Nose and 500 grain Round Nose are designed for controlled expansion in thinner skinned game such as lion, bear, etc., with the 350 grain Round Nose being adequate for any North American game. The 300 grain HP is designed to expand at .45-.70 velocities and accordingly, velocities are held down to those levels. Higher velocities are possible, but expansion becomes extreme and these bullets at high velocities should not be used on game animals if penetration and edible meat are the desired goal.

Our test rifle was exceptionally accurate. Most loads produced good groups, with H335 performing exceptionally well. The reloader must be careful not to load charges that are less than those listed, as possibly hazardous situations and large muzzle flashes can occur.

300 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.204**
.458"**#4500 HP****Ballistic Coefficient — .197****C.O.L. — 2.930"**

POWDER	VELOCITY				
	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps
SR 4759		39.3 gr.	40.8 gr.	42.4 gr.	43.9 gr.
MP 5744	43.9 gr.	45.1 gr.	46.3 gr.	47.4 gr.	48.6 gr.
IMR 4198	45.4 gr.	46.4 gr.	47.4 gr.	48.4 gr.	49.4 gr.
RL-7		54.8 gr.	55.9 gr.	56.9 gr.	58.0 gr.

*See Ballistics Tables on pages 209-210, Vol. II***350 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.238**
.458"**#4502 RN****Ballistic Coefficient — .189****C.O.L. — 2.950"**

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2450 fps	2500 fps
IMR 4198			62.2 gr.	66.5 gr.	68.7 gr.	70.8 gr.
RL-7		61.4 gr.	64.5 gr.	67.5 gr.	69.1 gr.	
IMR 3031		67.9 gr.	71.5 gr.	75.1 gr.		
H335	70.5 gr.	73.8 gr.	77.1 gr.	80.3 gr.	82.0 gr.	
IMR 4320	70.0 gr.	73.6 gr.	77.2 gr.			
H4895		73.7 gr.	78.2 gr.			

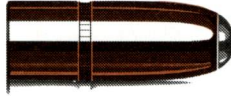
See Ballistics Tables on pages 210-212, Vol. II
 Indicates maximum load • use with caution

500 GRAIN BULLETS:

SECTIONAL DENSITY: .341
DIAMETER: .458"

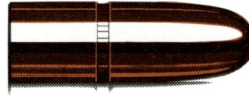
#4504 RN

Ballistic Coefficient — .287
C.O.L. — 3.310"



#4507 FMJ-RN

Ballistic Coefficient — .295
C.O.L. — 3.310"

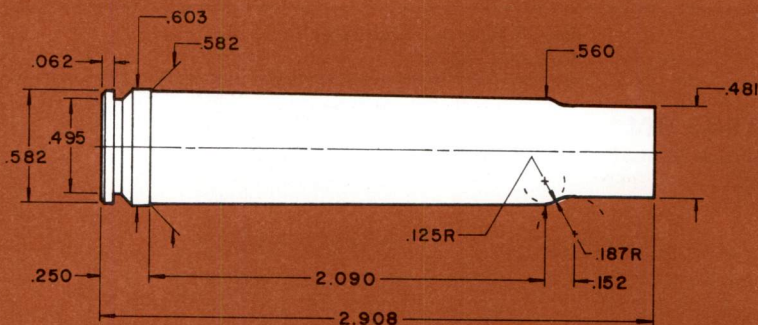


POWDER	VELOCITY				
	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps
RL-7	57.0 gr.	60.7 gr.	62.5 gr.		
IMR 4198		60.8 gr.	63.0 gr.	65.2 gr.	
IMR 3031		66.2 gr.	68.2 gr.	70.2 gr.	72.2 gr.
H335	64.6 gr.	68.9 gr.	71.0 gr.	73.2 gr.	
IMR 4064	66.4 gr.	70.6 gr.	72.8 gr.	74.9 gr.	
IMR 4320	66.4 gr.	70.8 gr.	72.9 gr.	75.1 gr.	77.3 gr.
H4895	66.4 gr.	70.7 gr.	73.1 gr.	75.3 gr.	
WIN 748		74.1 gr.	76.2 gr.	78.4 gr.	80.6 gr.

See Ballistics Tables on pages 212-214, 214-216, Vol. II

458 WINCHESTER MAGNUM

 Indicates maximum load • use with caution



460 WEATHERBY MAGNUM

RIFLE: WEATHERBY MARK V
BARREL: 26", 1 in 16" TWIST
CASE: WEATHERBY
PRIMER: FEDERAL 215

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 3.710"
MAX. CASE LENGTH: 2.908"
CASE TRIM LENGTH: 2.898"

Developing nearly 8000 foot pounds of muzzle energy with 500 grain bullets at 2600 fps, entitles the 460 Weatherby Magnum to the rating of the world's most powerful commercial cartridge. This ominous round was introduced by Roy Weatherby in 1958 and is based on the 378 Weatherby case necked up to 45 caliber. With its tremendous power, the 460 is more than adequate for any game animal on the earth.

Our test rifle was very accurate, with three shot groups of a minute of angle or less frequently obtained. In shooting this data, we found a twenty-five pound bag of lead shot between the shoulder and the buttstock was necessary to prevent badly bruised shoulders. Our test rifle also had a muzzle brake, which is intended to limit muzzle jump. However, with anything having as much recoil as the 460 Weatherby Magnum and considering the amount of shooting necessary, the shoulder protection was still necessary. This rifle showed a preference for H380 with the light bullet and IMR 4350 with the 500 grain Round Nose.

Warning: The loads recommended in this section should not be reduced. Reducing loads in a large capacity cartridge can lead to dangerous hangfires. Hangfires with a cartridge of this magnitude can be quite unpleasant!

350 GRAIN BULLETS:

SECTIONAL DENSITY: .238
DIAMETER: .458"

#4502 RN
Ballistic Coefficient — .189
C.O.L. — 3.355"



POWDER	VELOCITY						
	2500 fps	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps	2950 fps
IMR 4198		88.8 gr.	90.5 gr.	92.3 gr.	93.2 gr.		
IMR 3031	90.6 gr.	94.1 gr.	97.7 gr.	101.2 gr.	103.0 gr.		
IMR 4064	98.0 gr.	101.2 gr.	104.5 gr.	107.7 gr.	109.4 gr.	111.0 gr.	
H4895	97.6 gr.	101.3 gr.	105.0 gr.	108.7 gr.	110.5 gr.		
H380		101.9 gr.	105.8 gr.	109.6 gr.	111.6 gr.	113.5 gr.	115.5 gr.
IMR 4320	99.3 gr.	102.7 gr.	106.3 gr.	109.8 gr.	111.6 gr.		
WIN 760	104.8 gr.	108.9 gr.	113.0 gr.	117.0 gr.	119.1 gr.	121.1 gr.	123.2 gr.
IMR 4350	110.1 gr.	115.0 gr.	119.9 gr.	124.8 gr.			
IMR 4831	115.0 gr.	119.6 gr.	124.2 gr.				

See Ballistics Tables on pages 210-212, Vol. II

460 WEATHERBY MAGNUM

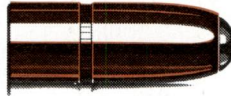
 Indicates maximum load • use with caution

500 GRAIN BULLETS:

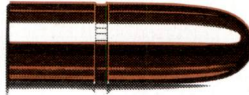
SECTIONAL DENSITY:
DIAMETER:

.341
.458"

#4504 RN
Ballistic Coefficient — .287
C.O.L. — 3.710"



#4507 FMJ-RN
Ballistic Coefficient — .295
C.O.L. — 3.710"



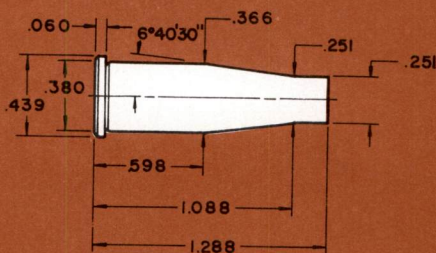
POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2550 fps	2600 fps	2650 fps
IMR 3031	89.9 gr.	94.6 gr.	99.4 gr.			
IMR 4064	94.9 gr.	99.4 gr.	103.9 gr.			
H4895	95.4 gr.	99.8 gr.	104.2 gr.	106.4 gr.		
IMR 4320	96.6 gr.	101.0 gr.	105.6 gr.	107.8 gr.		
H380	98.2 gr.	102.2 gr.	106.3 gr.	108.3 gr.		
WIN 760	102.4 gr.	107.0 gr.	111.5 gr.	113.8 gr.		
H414	106.8 gr.	110.8 gr.	114.8 gr.	116.8 gr.		
IMR 4350	104.9 gr.	110.0 gr.	115.4 gr.	118.1 gr.	120.8 gr.	123.6 gr.
IMR 4831	109.8 gr.	114.4 gr.	119.0 gr.	121.3 gr.		

See Ballistics Tables on pages 212-214, 214-216, Vol. II



Indicates maximum load • use with caution

*Pistol
Reloading
Data*



22 REMINGTON JET

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 5 $\frac{1}{2}$

BULLET DIA.: .222-.223"
MAXIMUM C.O.L.: 1.659"
MAX. CASE LENGTH: 1.288"
CASE TRIM LENGTH: 1.278"

The 22 Jet cartridge was introduced jointly by Remington and Smith and Wesson in 1961. The cartridge was initially chambered in the Smith and Wesson Model 53 revolver. Popularity of the cartridge rapidly dropped because of cylinder lock up problems. When fired, the fast tapering case would back out of the chamber slightly and lock up the cylinder.

However, with the single shot T/C no such problem exists, and the round can be exploited to its full potential. We did encounter one problem with our barrel. Once fired factory ammunition gave head separations, but by pulling the bullets, dropping the charge, and then seating the bullets to engage the rifling, we were able to fireform the cases and alleviate the headspace problem.

If this data is used for a Smith and Wesson Model 53, charges should be dropped by 10%. T/C barrels have a .224" bore diameter while Smith and Wessons have .222" or .223" diameter bores. The smaller bore diameter of the Smith and Wesson gives slightly higher pressures than the .224" diameter barrel of the T/C.

Best results were obtained using IMR 4227 or H110 with the Hornady 45 grain Hornet bullet.

40 GRAIN BULLETS:

SECTIONAL DENSITY: .116
DIAMETER: .222"

#2210 JET**Ballistic Coefficient — .104****C.O.L. — 1.550"**

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
H110	9.3 gr.	10.0 gr.	10.7 gr.	11.3 gr.	12.0 gr.	12.7 gr.
2400	9.9 gr.	10.5 gr.	11.0 gr.	11.5 gr.		
WIN 296	9.9 gr.	10.7 gr.	11.5 gr.	12.2 gr.	13.0 gr.	
IMR 4227	10.7 gr.	11.4 gr.	12.2 gr.	12.9 gr.	13.7 gr.	

See Ballistics Tables on pages 11-13, Vol. II

45 GRAIN BULLETS:

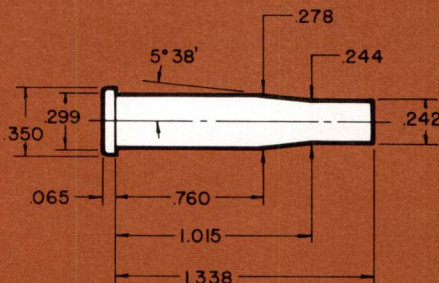
SECTIONAL DENSITY: .129
DIAMETER: .223"

#2220 Hornet**Ballistic Coefficient — .202****C.O.L. — 1.659"**

POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H110	8.9 gr.	9.6 gr.	10.3 gr.	11.0 gr.	11.7 gr.	12.4 gr.
2400	9.5 gr.	10.0 gr.	10.5 gr.	11.0 gr.		
WIN 296	9.3 gr.	10.1 gr.	10.8 gr.	11.5 gr.	12.3 gr.	
IMR 4227	10.1 gr.	10.9 gr.	11.7 gr.	12.4 gr.	13.2 gr.	
WIN 680	10.7 gr.	11.4 gr.	12.2 gr.	12.9 gr.		

See Ballistics Tables on pages 13-15, Vol. II

Indicates maximum load • use with caution



22 HORNET

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: WINCHESTER WSR

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 1.786"
MAX. CASE LENGTH: 1.403"
CASE TRIM LENGTH: 1.393"

The 22 Hornet has always been a fine short range varmint round. Only 300 f.p.s. velocity is lost when the 10" T/C data is compared to that obtained from a rifle. In a handgun, 2400 f.p.s. is really potent and consequently, the Hornet also makes an excellent small game cartridge.

Our 22 Hornet was the most accurate of the Thompson/Center barrels tested in the Hornady lab. Excellent groups were produced with Winchester 680 and Hercules 2400. Scopes mounted on the T/C make it possible to show the true accuracy potential of these handguns. Scopes and bases for mounting are presently available from such firms as Leupold, Redfield, Burris, Bushnell, and of course, Thompson/Center.

45 GRAIN BULLETS:

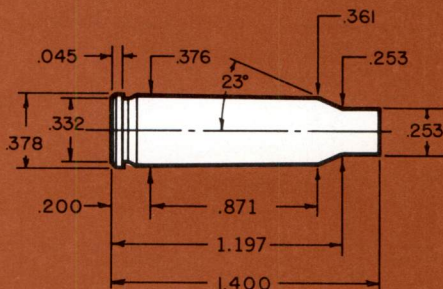
SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 HORNET
Ballistic Coefficient — .202
C.O.L. — 1.786"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
H110			8.7 gr.	9.1 gr.	9.4 gr.	9.8 gr.
2400	8.0 gr.	8.5 gr.	8.9 gr.	9.4 gr.	9.8 gr.	
WIN 680	8.6 gr.	9.2 gr.	9.9 gr.	10.6 gr.	11.2 gr.	11.9 gr.
IMR 4227	8.7 gr.	9.4 gr.	10.0 gr.	10.7 gr.	11.3 gr.	

See Ballistics Tables on pages 13-15, Vol. II



221 REMINGTON FIREBALL

RIFLE: REMINGTON XP-100
BARREL: 10 $\frac{3}{4}$ ", 1 in 12" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7 $\frac{1}{2}$

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 1.840"
MAX. CASE LENGTH: 1.400"
CASE TRIM LENGTH: 1.390"

The Fireball cartridge is a shortened version of the 222 Remington that was introduced in the short barreled XP-100 action in 1963. The XP-100 action is a shortened and modified version of the Model 600 action although it was introduced before the Model 600. This cartridge had the distinction of being the "hottest", flattest shooting pistol cartridge manufactured that also has commercially available ammunition. However, several newer pistol cartridges surpass the .221 Fireball. As a varmint, the 221 is superb, with accuracy capabilities of minute-of-angle or less. Topped with a scope and loaded with Hornady SX bullets the 221 is adequate for taking varmints in excess of 150 yards. The XP-100 Pistol is alive and well today in various calibers and configurations. However, the 221 Fireball caliber is practically dead.

In our test weapon, IMR 4198 gave the best overall results, followed closely by IMR 4227 and Reloder 7. It should be noted at this point that we do not recommend the use of the 60 grain Hollow Point in the 221. With the 1:12" twist and the 2500 fps maximum velocity obtainable, the long 60 grain Hollow Point does not always stabilize properly. The 60 grain Spire Point is shorter allowing it to be stabilized, resulting in excellent performance, on a par with other 22 caliber Hornady bullets.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 1.840"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
2400	12.8 gr.	13.3 gr.	13.9 gr.		
IMR 4227	14.5 gr.	15.1 gr.	15.7 gr.	16.3 gr.	
IMR 4198	16.8 gr.	17.4 gr.	18.0 gr.	18.6 gr.	
RL-7	17.0 gr.	17.5 gr.	18.0 gr.	18.6 gr.	19.1 gr.

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP
Ballistic Coefficient — .214
C.O.L. — 1.840"



#2245 SP
Ballistic Coefficient — .214
C.O.L. — 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.4 gr.	14.2 gr.	14.9 gr.	15.6 gr.	16.4 gr.
IMR 4227		14.5 gr.	15.2 gr.	15.9 gr.	16.6 gr.
IMR 4198	16.3 gr.	16.8 gr.	17.3 gr.	17.8 gr.	18.3 gr.
RL-7	16.5 gr.	17.1 gr.	17.7 gr.	18.2 gr.	18.8 gr.
BL-C2	21.1 gr.	21.7 gr.	22.4 gr.	23.0 gr.	

See Ballistics Tables on pages 15-18, Vol. II

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 1.840"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.8 gr.	14.4 gr.	15.1 gr.	15.7 gr.	16.4 gr.
IMR 4227		14.8 gr.	15.4 gr.	16.1 gr.	
IMR 4198		16.4 gr.	17.1 gr.	17.7 gr.	18.3 gr.
RL-7	16.2 gr.	16.8 gr.	17.3 gr.	17.9 gr.	
BL-C2	20.4 gr.	21.2 gr.	22.0 gr.		

See Ballistics Tables on pages 18-20, 20-22, Vol. II



Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 1.840"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 1.840"



2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 1.840"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.7 gr.	14.3 gr.	15.0 gr.	15.6 gr.	
IMR 4227	14.4 gr.	15.0 gr.	15.6 gr.	16.2 gr.	
IMR 4198		16.2 gr.	16.9 gr.	17.6 gr.	18.3 gr.
RL-7	16.1 gr.	16.7 gr.	17.2 gr.	17.8 gr.	
BL-C2	20.0 gr.	20.9 gr.	21.8 gr.		

See Ballistics Tables on pages 23-25, 25-28, 381-382, Vol. II

221 REMINGTON FIREBALL

60 GRAIN BULLETS:

SECTIONAL DENSITY:	.171
DIAMETER:	.224"

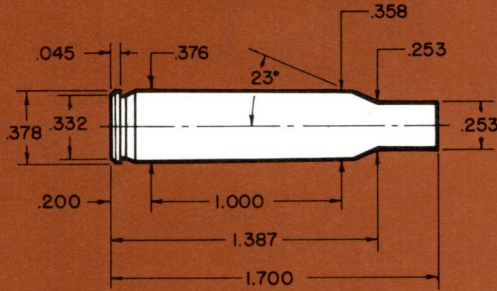
#2270 SP
Ballistic Coefficient — .264
C.O.L. — 1.840"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
WIN 680	12.0 gr.	12.8 gr.	13.5 gr.	14.2 gr.	14.9 gr.
IMR 4227	12.9 gr.	13.6 gr.	14.3 gr.	15.0 gr.	
IMR 4198	14.1 gr.	15.0 gr.	15.8 gr.	16.7 gr.	
RL-7	14.8 gr.	15.5 gr.	16.1 gr.	16.7 gr.	17.4 gr.
BL-C2		19.2 gr.	19.9 gr.	20.6 gr.	

See Ballistics Tables on pages 28-30, 382-383, Vol. II

 Indicates maximum load • use with caution



222 REMINGTON

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7½

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.130"
MAX. CASE LENGTH: 1.700"
CASE TRIM LENGTH: 1.690"

The 222 is an excellent round in a rifle, but loses ground when used in a 10" barreled pistol. Powder capacity of the 222 is too large for efficient performance in only 10 inches of barrel. Only the faster powders as listed perform well enough to produce uniformity capable of good accuracy. The 223 Remington chambered barrels, especially in the 14 inch length, have greatly surpassed the popularity of the 222 barrels.

BL-C2 and IMR 4198 performed best of all powders listed throughout the range of bullets tested. Hornady's 50 grain SX bullet proved to be perfect for 222 velocities when tested on prairie dogs. At 222 pistol velocities, only SX bullets and the 45 grain Hornet bullet should be used on varmints, and for small edible game, the 55 FMJ is a good performer.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 Hornet
Ballistic Coefficient — .202
C.O.L. — 2.130"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4198	18.5 gr.	19.1 gr.	19.6 gr.	20.2 gr.	20.7 gr.	21.3 gr.
IMR 3031	21.8 gr.	22.4 gr.	22.9 gr.			
BL-C2	22.7 gr.	23.4 gr.	24.2 gr.	24.9 gr.		
WIN 748	24.0 gr.	24.7 gr.	25.3 gr.	26.0 gr.		

See Ballistics Tables on pages 13-15, Vol. II

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP
Ballistic Coefficient — .214
C.O.L. — 2.130"



#2245 SP
Ballistic Coefficient — .214
C.O.L. — 2.130"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4198	17.5 gr.	18.2 gr.	18.9 gr.	19.6 gr.	20.2 gr.
IMR 3031	21.0 gr.	21.8 gr.	22.5 gr.		
BL-C2	21.3 gr.	22.1 gr.	23.0 gr.	23.8 gr.	24.6 gr.
WIN 748	22.7 gr.	23.5 gr.	24.4 gr.	25.2 gr.	26.1 gr.

See Ballistics Tables on pages 15-18, Vol. II



Indicates maximum load • use with caution

52-53 GRAIN BULLETS:

SECTIONAL DENSITY: .148 - .151
DIAMETER: .224"

#2249 BTHP Match
Ballistic Coefficient — .229
C.O.L. — 2.130"



#2250 HP Match
Ballistic Coefficient — .218
C.O.L. — 2.130"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 4198	16.7 gr.	17.4 gr.	18.1 gr.	18.8 gr.	19.4 gr.
IMR 3031	20.1 gr.	20.9 gr.	21.6 gr.	22.4 gr.	
BL-C2	20.7 gr.	21.5 gr.	22.3 gr.	23.1 gr.	23.9 gr.
WIN 748	21.9 gr.	22.7 gr.	23.4 gr.	24.2 gr.	24.9 gr.

See Ballistics Tables on pages 18-20, 20-22, Vol. II

222 REMINGTON

55 GRAIN BULLETS:

SECTIONAL DENSITY:	.157
DIAMETER:	.224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.130"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.130"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.130"



#2267 FMJ BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.130"

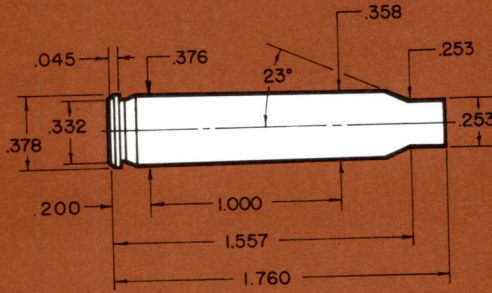


POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 4198	16.7 gr.	17.4 gr.	18.1 gr.	18.8 gr.	19.4 gr.
IMR 3031	20.1 gr.	20.9 gr.	21.6 gr.	22.4 gr.	
BL-C2	20.7 gr.	21.5 gr.	22.3 gr.	23.1 gr.	23.9 gr.
WIN 748	21.9 gr.	22.7 gr.	23.4 gr.	24.2 gr.	24.9 gr.

See Ballistics Tables on pages 23-25, 25-28, 381-382, Vol. II



Indicates maximum load • use with caution



223 REMINGTON

TEST PISTOL: T/C CONTENDER
BARREL: 14", 1 in 14" TWIST
CASE: HORNADY/FRONTIER
PRIMER: REMINGTON 7½

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.260"
MAX. CASE LENGTH: 1.760"
CASE TRIM LENGTH: 1.750"

The 223 Remington began as the 5.56mm military cartridge in 1957. Several years later, it was introduced to the public as a commercial cartridge and is currently loaded by all major manufacturers. It is extremely popular, used mainly for varmint hunting. It has been offered in bolt action, pump, semi-automatic, lever action, single shot and of course, the Thompson/Center Contender pistol.

This cartridge does quite well in the 14" barreled gun, pushing, the 50 grain Hornady SX bullet to the magical 3000 fps barrier. Accuracy with a scoped pistol can be remarkable with 1 minute of angle groups not uncommon.

The SX (super explosive) bullets work especially well in this cartridge and this firearm. They are accurate and expand easily and reliably for quick, sure performance on varmints.

45 GRAIN BULLETS:

SECTIONAL DENSITY: .128
DIAMETER: .224"

#2230 HORNET
Ballistic Coefficient — .202
C.O.L. — 2.200"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4198	18.6 gr.	19.3 gr.	20.0 gr.	20.8 gr.	21.5 gr.	
H 4198	20.0 gr.	20.5 gr.	21.1 gr.	21.7 gr.		
H322	21.6 gr.	22.4 gr.	23.1 gr.	23.9 gr.		
AA 2230	22.3 gr.	22.9 gr.	23.6 gr.	24.3 gr.	25.0 gr.	25.7 gr.
IMR 3031	23.4 gr.	24.1 gr.	24.7 gr.			
BL-C2	24.3 gr.	25.2 gr.	26.1 gr.	27.0 gr.		
WIN 748	25.2 gr.	26.0 gr.	26.7 gr.	27.5 gr.		
H335	22.5 gr.	23.3 gr.	24.0 gr.	24.7 gr.	25.5 gr.	

See Ballistics Tables on pages 13-15, Vol. II

 Indicates maximum load • use with caution

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.200"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.200"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4198	18.5 gr.	19.2 gr.	19.8 gr.	20.4 gr.	21.1 gr.	21.7 gr.
H322	21.3 gr.	22.0 gr.	22.8 gr.	23.6 gr.	24.3 gr.	
H335	21.1 gr.	22.1 gr.	23.0 gr.	23.9 gr.	24.8 gr.	
AA 2230	22.0 gr.	22.6 gr.	23.2 gr.	23.9 gr.	24.5 gr.	25.1 gr.
IMR 3031	23.0 gr.	23.5 gr.	24.1 gr.	24.7 gr.	25.2 gr.	
IMR 4895	24.0 gr.	24.6 gr.	25.3 gr.	25.9 gr.	26.5 gr.	
BL-C2	24.4 gr.	25.2 gr.	26.1 gr.			
WIN 748	24.6 gr.	25.3 gr.	26.1 gr.	26.8 gr.	27.5 gr.	

See Ballistics Tables on pages 15-18, Vol. II

Indicates maximum load • use with caution

52-53 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.148-.151**
.224"**#2249 BTHP Match**
Ballistic Coefficient — .229
C.O.L. — 2.200"**#2250 HP Match**
Ballistic Coefficient — .218
C.O.L. — 2.200"

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4198	17.9 gr.	18.6 gr.	19.3 gr.	19.9 gr.	20.6 gr.	
H322	20.3 gr.	21.1 gr.	22.0 gr.	22.8 gr.	23.7 gr.	
AA 2230	20.8 gr.	21.6 gr.	22.4 gr.	23.1 gr.	23.9 gr.	24.7 gr.
H335	21.1 gr.	21.9 gr.	22.7 gr.	23.5 gr.	24.2 gr.	
IMR 3031	21.9 gr.	22.6 gr.	23.3 gr.	24.0 gr.	24.7 gr.	
IMR 4895	23.5 gr.	24.2 gr.	24.9 gr.	25.7 gr.	26.4 gr.	
BL-C2	23.8 gr.	24.7 gr.	25.5 gr.	26.4 gr.		
WIN 748	24.1 gr.	24.9 gr.	25.7 gr.	26.5 gr.	27.3 gr.	

See Ballistics Tables on pages 18-20, 20-22, Vol. II Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.200"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.200"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.200"



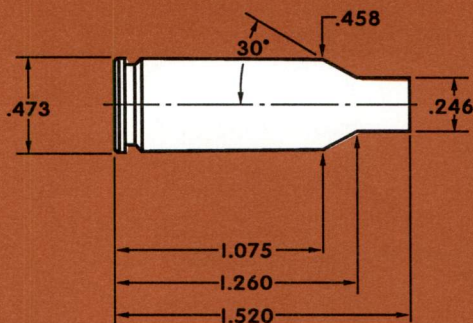
#2267 FMJ BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.200"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4198	17.9 gr.	18.6 gr.	19.3 gr.	19.9 gr.	20.6 gr.	
H322	20.3 gr.	21.1 gr.	22.0 gr.	22.8 gr.	23.7 gr.	
AA 2230	20.8 gr.	21.6 gr.	22.4 gr.	23.1 gr.	23.9 gr.	24.7 gr.
H335	21.1 gr.	21.9 gr.	22.7 gr.	23.5 gr.	24.2 gr.	
IMR 3031	21.9 gr.	22.6 gr.	23.3 gr.	24.0 gr.	24.7 gr.	
IMR 4895	23.5 gr.	24.2 gr.	24.9 gr.	25.7 gr.	26.4 gr.	
BL-C2	23.8 gr.	24.7 gr.	25.5 gr.	26.4 gr.		
WIN 748	24.1 gr.	24.9 gr.	25.7 gr.	26.5 gr.	27.3 gr.	

See Ballistics Tables on pages 23-25, 25-28, 381-382, Vol. II



22 BR

TEST PISTOL: REMINGTON XP-100
BARREL: 14½", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7½

BULLET DIAMETER: .224"
MAXIMUM C.O.L.: 2.020"
MAX. CASE LENGTH: 1.520"
CASE TRIM LENGTH: 1.510"

In 1961, Frank C. Barnes developed a 308 Winchester case shortened to 1.5 inches. This wildcat was further modified by other shooters, including being necked down to 22 caliber. Remington standardized this caliber in 1978, naming it the 22 Bench Rest Remington. They also produced two other BR calibers, the 6mm BR and the 7mm BR, all based on the same case. The BR cases differ from the parent 308 Winchester by having a small primer pocket, which some feel aids in accuracy. This may be correct as the 22 BR has won some benchrest events.

When loaded in the XP-100 pistol, it is primarily a varmint cartridge. It offers superb accuracy and performance rivaling the .223 Remington in a rifle. Reloder 12 and Accurate Arms 2460 produced top velocity. The SX bullets gave excellent accuracy with devastating expansion.

50 GRAIN BULLETS:

SECTIONAL DENSITY: .142
DIAMETER: .224"

#2240 SXSP

Ballistic Coefficient — .214
C.O.L. — 2.010"



#2245 SP

Ballistic Coefficient — .214
C.O.L. — 2.010"



POWDER	VELOCITY						
	2700 fps	2800 fps	2900 fps	3000 fps	3050 fps	3100 fps	3150 fps
H322	24.1 gr.	25.4 gr.	26.7 gr.	28.0 gr.	28.7 gr.		
AA 2230	26.0 gr.	26.9 gr.	27.8 gr.	28.7 gr.	29.1 gr.	29.5 gr.	
AA 2460	25.8 gr.	26.6 gr.	27.7 gr.	28.7 gr.	29.2 gr.	29.8 gr.	30.3 gr.
RL-12	25.7 gr.	26.9 gr.	28.2 gr.	29.4 gr.	30.0 gr.	30.6 gr.	31.2 gr.
BL-C2	28.5 gr.	29.3 gr.	30.2 gr.	31.0 gr.	31.4 gr.	31.9 gr.	
WIN 748	28.2 gr.	29.3 gr.	30.3 gr.	31.4 gr.	31.9 gr.		

See Ballistics Tables on pages 15-18, Vol. II

22 BR

Indicates maximum load • use with caution

55 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.157
.224"

#2260 SXSP

Ballistic Coefficient — .235
C.O.L. — 2.010"



#2265 SP

Ballistic Coefficient — .235
C.O.L. — 2.010"



#2266 SP w/c

Ballistic Coefficient — .235
C.O.L. — 2.010"



#2267 FMJ-BT w/c

Ballistic Coefficient — .243
C.O.L. — 2.010"

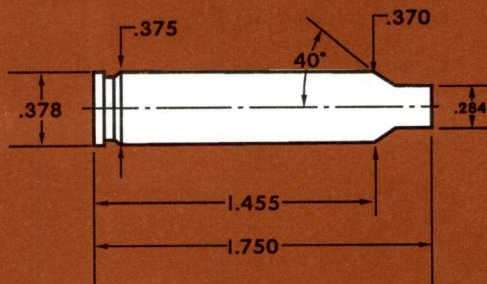


POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3050 fps	3100 fps
H322	24.4 gr.	25.5 gr.	26.5 gr.	27.6 gr.	28.1 gr.	
AA 2230	26.3 gr.	27.1 gr.	27.8 gr.	28.6 gr.	29.0 gr.	
AA 2460	25.8 gr.	26.9 gr.	28.0 gr.	29.0 gr.	29.6 gr.	30.1 gr.
RL-12	26.2 gr.	27.4 gr.	28.5 gr.	29.7 gr.	30.3 gr.	30.8 gr.
BL-C2	27.9 gr.	28.9 gr.	30.0 gr.	31.0 gr.	31.5 gr.	
WIN 748	28.3 gr.	29.4 gr.	30.5 gr.	31.6 gr.		

See Ballistics Tables on pages 23-25, 25-28, 381-382, Vol. II



Indicates maximum load • use with caution



6mm TCU

TEST PISTOL: T/C CONTENDER
BARREL: 14", 1 in 10" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: FEDERAL 205

BULLET DIAMETER: .243"
MAXIMUM C.O.L.: 2.500"
MAX. CASE LENGTH: 1.750"
CASE TRIM LENGTH: 1.740"

Necking up 22 calibers to 6mm has occurred to a number of shooters and reloaders. In fact, there are two versions of the 223 expanded to 6mm. These two, the 6mm/223 and the 6mm TCU (Thompson/Center Ugalde) are similar but not interchangeable. However, the 6mm TCU reloading can be used for the 6mm/223, starting at the lowest listed load and carefully working upwards.

The 6mm TCU is made by expanding the 223 neck to 6mm and fireforming the cartridge in the Contender pistol. A tapered expander eases the neck expanding while starting loads should be used as a fireforming load. Commercial cases work best for reforming. When resizing, care should be taken not to set the shoulder back, leading to inaccuracy and poor case life.

While the 6mm TCU lacked some "knockdown" power for distant silhouettes, it is an excellent varmint cartridge. Accurate, flat shooting and low in recoil, the 70 grain SXSP offers deadly expansion.

70 GRAIN BULLETS:

SECTIONAL DENSITY: .169
DIAMETER: .243"

#2410 SP
Ballistic Coefficient — .262
C.O.L. — 2.275"



#2415 SXSP
Ballistic Coefficient — .269
C.O.L. — 2.275"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2650 fps	2700 fps	2750 fps
RL-7	21.3 gr.	22.3 gr.	23.2 gr.			
H322	24.0 gr.	24.8 gr.	25.6 gr.	25.9 gr.		
AA 2460	25.3 gr.	26.3 gr.	27.3 gr.	27.8 gr.	28.2 gr.	28.7 gr.
IMR 4895	25.6 gr.	26.6 gr.	27.6 gr.	28.1 gr.		
H335	25.9 gr.	26.6 gr.	27.6 gr.	28.0 gr.	28.5 gr.	
WIN 748	27.6 gr.	28.4 gr.	29.2 gr.	29.6 gr.	30.0 gr.	

See Ballistics Tables on pages 37-39, 39-40, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .181
DIAMETER: .243"

#2420 HP
Ballistic Coefficient — .294
C.O.L. — 2.345"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2650 fps
RL-7	19.8 gr.	20.8 gr.	21.7 gr.	22.6 gr.		
H322	22.4 gr.	23.3 gr.	24.1 gr.	25.0 gr.		
AA 2460		24.0 gr.	25.2 gr.	26.4 gr.	27.6 gr.	
IMR 4895	24.0 gr.	24.9 gr.	25.9 gr.	26.8 gr.	27.8 gr.	
H335	23.9 gr.	24.9 gr.	25.9 gr.	26.8 gr.	27.8 gr.	28.3 gr.
WIN 748	25.5 gr.	26.4 gr.	27.3 gr.	28.2 gr.	29.1 gr.	

See Ballistics Tables on pages 40-42, Vol. II

 Indicates maximum load • use with caution

80 GRAIN BULLETS:

SECTIONAL DENSITY: .194
DIAMETER: .243"

#2435 SSSP

Ballistic Coefficient — .283
C.O.L. — 2.410"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
RL-7	20.0 gr.	21.0 g.	22.0 gr.		
H322	23.1 gr.	24.1 gr.	25.1 gr.		
AA 2460	23.0 gr.	24.1 gr.	25.2 gr.	26.3 gr.	27.4 gr.
H335	23.7 gr.	24.8 gr.	25.8 gr.	26.8 gr.	27.9 gr.
IMR 4895	24.1 gr.	25.1 gr.	26.1 gr.	27.1 gr.	
WIN 748	25.9 gr.	26.9 gr.	27.9 gr.		

See Ballistics Tables on pages 44-46, Vol. II

87 GRAIN BULLETS:

SECTIONAL DENSITY: .210
DIAMETER: .243"

#2440 SP

Ballistic Coefficient — .327
C.O.L. — 2.425"



#2442 BTHP

Ballistic Coefficient — .376
C.O.L. — 2.425"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2450 fps
RL-7	18.5 gr.	19.5 g.	20.5 gr.	21.5 gr.		
H322	20.9 gr.	21.9 gr.	22.9 gr.	23.9 gr.		
AA 2460	21.6 gr.	22.7 gr.	23.8 gr.	24.8 gr.	25.9 gr.	26.5 gr.
H335		22.9 gr.	23.9 gr.	24.9 gr.	26.0 gr.	26.5 gr.
IMR 4895		23.1 gr.	24.2 gr.	25.2 gr.	26.3 gr.	26.8 gr.
WIN 748	23.6 gr.	24.6 gr.	25.6 gr.	26.5 gr.	27.5 gr.	

See Ballistics Tables on pages 46-47, 47-49, Vol. II

Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY: .242
DIAMETER: .243"

#2450 SP
Ballistic Coefficient — .381
C.O.L. — 2.500"



#2453 BTSP
Ballistic Coefficient — .405
C.O.L. — 2.434"



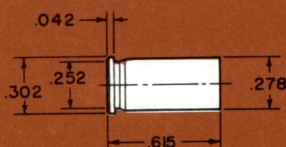
#2455 RN
Ballistic Coefficient — .230
C.O.L. — 2.436"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2250 fps	2300 fps
RL-7	18.4 gr.	19.6 gr.	20.7 gr.			
H322	20.3 gr.	21.4 gr.	22.4 gr.	23.5 gr.		
AA 2460	19.9 gr.	21.4 gr.	22.9 gr.	24.5 gr.		
H335	20.7 gr.	21.9 gr.	23.2 gr.	24.5 gr.		
IMR 4895		22.6 gr.	23.7 gr.	24.9 gr.	25.5 gr.	26.0 gr.
WIN 748	22.5 gr.	23.8 gr.	25.1 gr.	26.4 gr.		

See Ballistics Tables on pages 49-51, 51-53, 53-55, 384-385, 385, Vol. II

 Indicates maximum load • use with caution



25 ACP

PISTOL: BAUER
BARREL: 2", 1 in 16" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 100

BULLET DIAMETER: .251"
MAXIMUM C.O.L.: .900"
MAX. CASE LENGTH: .615"
CASE TRIM LENGTH: .605"

This diminutive 25 caliber cartridge was introduced in the U.S. in 1908 in a Browning-designed Colt. The 25 Auto is popular as a self-defense weapon because of its small size; its power is similar to but slightly less than that of the 22 rimfire. Other than plinking, it is marginal for any other use.

At the time of this writing, Hornady makes the only 25 caliber, .251" diameter bullets available to the reloader. In addition, Hornady provides reloading dies and loaded ammunition. Handloading the 25 ACP is not particularly rewarding. The cases and bullets are small and powder charges are miniscule. *Use caution since a double charge may not be noticeable except when fired!* Charges listed in the tables are rounded to the nearest tenth of a grain. Because of the exceptionally light loads used in this cartridge, and the rounding of data, two velocities may show the same charge.

During our testing Hercules Red Dot provided the best uniformity and accuracy.

50 GRAIN BULLETS:

SECTIONAL DENSITY:	.113
DIAMETER:	.251"

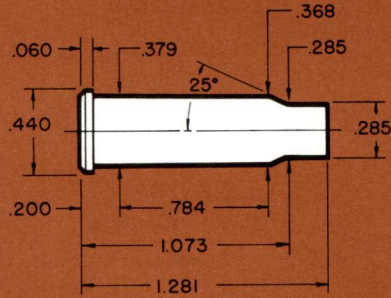
#3545 FMJ-RN
Ballistic Coefficeint — .116
C.O.L. — .900"



POWDER	VELOCITY				
	650 fps	700 fps	750 fps	800 fps	850 fps
700-X	.8 gr.	.8 gr.	.9 gr.	1.0 gr.	
Red Dot	.8 gr.	1.0 gr.	1.1 gr.	1.2 gr.	
Bullseye	1.0 gr.	1.1 gr.	1.1 gr.	1.2 gr.	
HP-38	1.0 gr.	1.0 gr.	1.1 gr.	1.2 gr.	1.3 gr.
WIN 231	1.2 gr.	1.3 gr.	1.4 gr.	1.5 gr.	1.6 gr.

See Ballistics Tables on pages 273-274, 274-275, Vol. II

 Indicates maximum load • use with caution



256 WINCHESTER MAGNUM

PISTOL: RUGER HAWKEYE
BARREL: 8½", 1 in 14" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSR

BULLET DIAMETER: .257"
MAXIMUM C.O.L.: 1.825"
MAX. CASE LENGTH: 1.281"
CASE TRIM LENGTH: 1.271"

In the last several decades arms makers have discovered and exploited a very substantial "Collector's Market" for new firearms of all types: replicas, commemoratives, special editions. Judging from the volume of such issues, making firearms to look at instead of shoot must be a profitable business.

Then, of course, there's the phenomenon of the "instant collector's item" — manufacturing a firearm which simply doesn't sell and is promptly (and quietly) discontinued. Sturm, Ruger & Company didn't intend to get into such business with its Hawkeye pistol, but that's what happened.

Introduced in 1961 in response to the clamor for an improved long-range cartridge/pistol combination, the 256 Winchester Magnum is based on a necked down 357 Magnum revolver case. Ruger introduced this new cartridge in a unique new pistol, the 256 Hawkeye, a single shot handgun built on a revolver frame, featuring a pivoting breech block to handle the pressures developed by the 256 cartridge. With the chamber integral with the barrel, the full velocity potential of the round was realized.

While the Ruger system worked, it didn't sell — and the Hawkeye was withdrawn from the market in just a few years. Winchester's new cartridge didn't fare much better when offered in factory rifles (Marlin's Model 62: see the Rifle Data section for loads) though it could develop almost 600 fps more velocity in the longer barrels. The 256 was available in the popular Thompson Center Contender and the Merrill Single Shot, but is rarely encountered today.

60 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .257"

#2510 FP
Ballistic Coefficient — .101
C.O.L. — 1.560"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
Unique	8.0 gr.	8.6 gr.	9.2 gr.	9.8 gr.		
Herco	8.4 gr.	9.1 gr.	9.8 gr.	10.5 gr.		
2400				13.8 gr.	14.6 gr.	15.4 gr.
H4227			14.5 gr.	15.2 gr.	16.0 gr.	16.8 gr.

See Ballistics Tables on pages 55-58, Vol. II

75 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .257"

#2520 HP
Ballistic Coefficient — .257
C.O.L. — 1.740"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
Unique	6.7 gr.	7.3 gr.	7.9 gr.	8.6 gr.	9.2 gr.	
Herco	7.0 gr.	7.6 gr.	8.2 gr.	8.8 gr.		
H110		9.5 gr.	10.3 gr.	11.1 gr.		
2400				12.5 gr.	13.1 gr.	13.7 gr.
H4227				12.0 gr.	13.2 gr.	14.5 gr.

See Ballistics Tables on pages 58-60, Vol. II

 Indicates maximum load • use with caution

87 GRAIN BULLETS:

SECTIONAL DENSITY: .188
DIAMETER: .257"

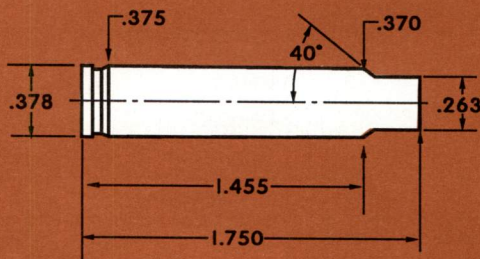
#2530 SP
Ballistic Coefficient — .322
C.O.L. — 1.825"



POWDER	VELOCITY					
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps
Unique	5.4 gr.	6.0 gr.	6.7 gr.	7.4 gr.	8.0 gr.	
Herco	5.7 gr.	6.3 gr.	6.9 gr.	7.6 gr.	8.2 gr.	
H110		8.4 gr.	9.0 gr.	9.6 gr.	10.3 gr.	
2400	8.0 gr.	8.7 gr.	9.4 gr.	10.1 gr.	10.8 gr.	11.5 gr.
H4227				10.9 gr.	11.9 gr.	12.9 gr.
H4198		12.0 gr.	12.9 gr.	13.8 gr.	14.6 gr.	

See Ballistics Tables on pages 60-62, Vol. II

256 WINCHESTER MAGNUM



6.5mm TCU

TEST PISTOL: T/C CONTENDER
BARREL: 10", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: REMINGTON 7 $\frac{1}{2}$

BULLET DIAMETER: .264"
MAXIMUM C.O.L.: 2.700"
MAX. CASE LENGTH: 1.750"
CASE TRIM LENGTH: 1.740"

Wes Ugalde designed a series of cartridges, based on the 223 Remington case, for silhouette shooting. These cartridges are formed by expanding the case neck and then fire forming the case. A tapered neck expander is usually required. Starting loads expand the case to its reduced taper and sharper shoulder than its parent case. Commercial cases work best for reforming.

As with many single shot pistol cartridges, in the Thompson/Center it is important not to set the shoulder back during resizing. If the shoulder is set back, the result is poor accuracy and short case life.

Shooters have found the 6.5mm TCU to be borderline on the distant rams. Although hit, they may fail to tumble. It has been, however, successfully used on varmints with the 100 grain Spire Point and on deer sized game with the 129 grain Spire Point.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .264"

#2610 SP
Ballistic Coefficient — .358
C.O.L. — 2.500"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
RL-7	20.6 gr.	21.6 gr.	22.6 gr.	23.6 gr.	24.6 gr.
IMR 3031	24.4 gr.	25.2 gr.	26.0 gr.	26.9 gr.	
H322	24.0 gr.	25.0 gr.	26.0 gr.	27.0 gr.	28.0 gr.
IMR 4895	24.8 gr.	25.9 gr.	27.1 gr.	28.2 gr.	
WIN 748	27.0 gr.	28.4 gr.	29.8 gr.		

See Ballistics Tables on pages 69-71, Vol. II

129 GRAIN BULLETS:

SECTIONAL DENSITY: .264
DIAMETER: .264"

#2620 SP
Ballistic Coefficient — .445
C.O.L. - 2.550"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	1950 fps	2000 fps	2050 fps
RL-7	19.7 gr.	20.7 gr.	21.7 gr.	22.2 gr.		
H322	21.8 gr.	22.8 gr.	23.8 gr.	24.3 gr.	24.8 gr.	
IMR 3031	22.9 gr.	24.0 gr.	25.0 gr.	25.6 gr.	26.0 gr.	
IMR 4895	23.3 gr.	24.5 gr.	25.7 gr.	26.3 gr.	26.9 gr.	
WIN 748	24.6 gr.	26.0 gr.	27.4 gr.	28.1 gr.	28.8 gr.	29.5 gr.
BL-C2		25.9 gr.	27.5 gr.	28.3 gr.	29.0 gr.	

See Ballistics Tables on pages 71-74, 227-228, 252-254, Vol. II

Indicates maximum load • use with caution

6.5mm TCU

140 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .264"

#2630 SP
Ballistic Coefficient — .465
C.O.L. — 2.700"



#2633 BTHP Match
Ballistic Coefficient — .484
C.O.L. — 2.700"

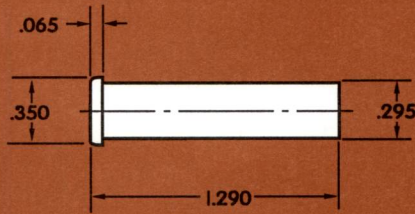


POWDER	VELOCITY				
	1700 fps	1800 fps	1850 fps	1900 fps	1950 fps
H322	21.4 gr.	22.4 gr.	23.0 gr.		
IMR 3031	22.0 gr.	23.2 gr.	23.8 gr.	24.5 gr.	25.1 gr.
IMR 4895	22.7 gr.	24.2 gr.	24.9 gr.	25.6 gr.	
BL-C2	24.4 gr.	25.7 gr.	26.4 gr.	27.0 gr.	
WIN 748	24.6 gr.	26.0 gr.	26.6 gr.	27.3 gr.	28.0 gr.

See Ballistics Tables on pages 74-76, 76-78, 229-230, 230-232, 254-255, 256-257, Vol. II



Indicates maximum load • use with caution



270 REN

TEST PISTOL: MERRILL
BARREL: 8", 1 in 8" TWIST
CASE: WINCHESTER REFORMED
PRIMER: FEDERAL 200

BULLET DIAMETER: .277"
MAXIMUM C.O.L.: 1.900"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

Developed in 1985 by Charles Rensing and Jim Rock, this cartridge was designed for the NRA Hunters Pistol Silhouette competition. Rules for this category allow only straight walled cartridge cases. The 270 REN is the 22 Hornet necked up to 270 caliber, resulting in a rimmed, straight case. One attribute of this cartridge is low recoil, allowing the use of higher magnification telescopes with shorter eye relief. A shooter using a 12x telescope on a pistol chambered for the 270 REN has little concern of the scope hitting him during recoil.

Firearms for the 270 REN are available from RPM, Thompson/Center and Merrill.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .186
DIAMETER: .277"

#2710 SP
Ballistic Coefficient — .307
C.O.L. — 1.790"



POWDER	VELOCITY					
	1100 fps	1200 fps	1300 fps	1400 fps	1500 fps	1600 fps
H110		6.4 gr.	7.4 gr.	8.3 gr.	9.3 gr.	10.2 gr.
2400	6.8 gr.	7.5 gr.	8.1 gr.	8.8 gr.	9.4 gr.	
MP5744	7.5 gr.	8.1 gr.	8.7 gr.	9.2 gr.	9.8 gr.	10.4 gr.
WIN 296			7.1 gr.	8.4 gr.	9.7 gr.	11.0 gr.
IMR 4227	6.8 gr.	7.8 gr.	8.8 gr.	9.8 gr.	10.9 gr.	

See Ballistics Tables on pages 80-83, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .277"

#2720 HP
Ballistic Coefficient — .352
C.O.L. — 1.900"

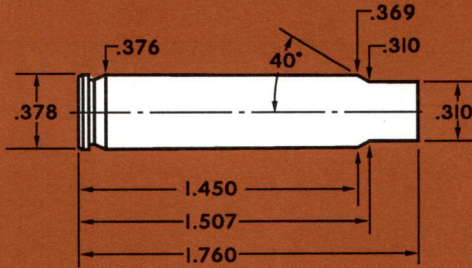


POWDER	VELOCITY				
	1100 fps	1200 fps	1300 fps	1400 fps	1500 fps
H110	6.3 gr.	7.2 gr.	8.0 gr.	8.9 gr.	9.8 gr.
WIN 296	6.0 gr.	7.0 gr.	8.0 gr.	9.0 gr.	9.9 gr.
2400	6.5 gr.	7.4 gr.	8.3 gr.	9.2 gr.	10.0 gr.
MP5744	7.8 gr.	8.3 gr.	8.9 gr.	9.4 gr.	10.0 gr.
IMR 4227	7.7 gr.	8.5 gr.	9.3 gr.	10.1 gr.	10.8 gr.

See Ballistics Tables on pages 83-86, Vol. II



Indicates maximum load • use with caution



7mm TCU

TEST PISTOL: T/C CONTENDER
BAREL: 10", 1 in 10" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: REMINGTON 7½

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.675"
MAX. CASE LENGTH: 1.760"
CASE TRIM LENGTH: 1.750"

The 7mm TCU is one of the best and most mild-mannered wildcat silhouette cartridges. Originating in the late seventies, Thompson Center chose Wes Ugalde's (hence TCU) cartridge for their Contender handgun. It is a superb choice as accuracy is excellent and recoil is mild.

Cases are formed from the 223 Remington, using standard 7mm TCU dies and a tapered neck expander. After neck expanding, a starting load is used to fire form the new case. These starting loads are usually accurate and good practice loads. Commercial (as opposed to military 5.56mm) brass cases work best for reforming.

The 14" barrel from Thompson Center will provide from 150 to 200 fps higher velocity.

IMR 4895 produced high velocities in almost all bullet weights and was especially useful with the 154 grain bullet.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP
Ballistic Coefficient — .279
C.O.L. — 2.450"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2150 fps
RL-7	21.4 gr.	22.4 gr.	23.5 gr.	24.5 gr.	25.6 gr.	26.1 gr.
H322	24.2 gr.	25.2 gr.	26.2 gr.	27.2 gr.	28.1 gr.	
IMR 3031	25.4 gr.	26.5 gr.	27.6 gr.	28.7 gr.		
IMR 4895		26.7 gr.	28.1 gr.	29.4 gr.	30.7 gr.	
WIN 748	28.7 gr.	29.7 gr.	30.8 gr.			
BL-C2	30.4 gr.	31.6 gr.	32.9 gr.			

See Ballistics Tables on pages 95-97, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP
Ballistic Coefficient — .350
C.O.L. — 2.550"



#2811 SSSP
Ballistic Coefficient — .350
C.O.L. — 2.550"



#2815 HP
Ballistic Coefficient — .334
C.O.L. — 2.550"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2050 fps
RL-7	19.8 gr.	20.7 gr.	21.6 gr.	22.6 gr.		
H322	22.1 gr.	23.3 gr.	24.6 gr.	25.8 gr.	27.0 gr.	
IMR 3031	24.2 gr.	25.2 gr.	26.2 gr.	27.2 gr.	28.2 gr.	
IMR 4895		25.4 gr.	26.8 gr.	28.2 gr.	29.6 gr.	30.3 gr.
WIN 748		27.8 gr.	29.2 gr.	30.6 gr.		
BL-C2		29.7 gr.	30.8 gr.	32.0 gr.		

See Ballistics Tables on pages 97-99, 100-102, 396-397, 397-398, Vol. II

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 2.625"



#2825 BTSP

Ballistic Coefficient — .453
C.O.L. — 2.625"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	1950 fps
RL-7	19.9 gr.	21.0 gr.			
H322		23.6 gr.	24.6 gr.	25.6 gr.	26.1 gr.
IMR 3031	24.3 gr.	25.4 gr.	26.4 gr.	27.5 gr.	
IMR 4895	25.3 gr.	26.4 gr.	27.5 gr.	28.7 gr.	29.2 gr.
WIN 748	27.3 gr.	28.5 gr.	29.6 gr.	30.7 gr.	
BL-C2	28.1 gr.	29.3 gr.	30.6 gr.	31.9 gr.	

See Ballistics Tables on pages 102-104, 107-109, 398-399, 399-400, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

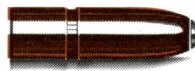
#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.675"



#2835 RN

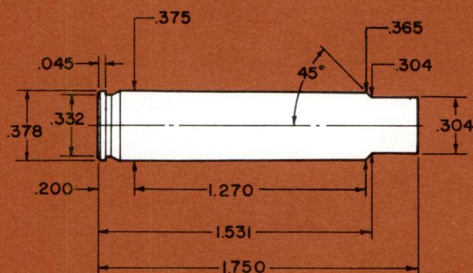
Ballistic Coefficient — .279
C.O.L. — 2.573"



POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1800 fps	1850 fps
H322	21.3 gr.	22.4 gr.	23.6 gr.	24.8 gr.	
IMR 3031	22.9 gr.	23.9 gr.	25.0 gr.	26.0 gr.	
IMR 4895	24.0 gr.	25.3 gr.	26.5 gr.	27.7 gr.	28.3 gr.
WIN 748	24.8 gr.	26.3 gr.	27.9 gr.	29.4 gr.	
BL-C2	26.0 gr.	27.4 gr.	28.9 gr.	30.4 gr.	

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II

 Indicates maximum load • use with caution



7x45mm INGRAM (7X223 IMPROVED)

PISTOL: REMINGTON XP-100
BARREL: 14.5", 1 in 10" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: REMINGTON 7 $\frac{1}{2}$

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.685"
MAX. CASE LENGTH: 1.750"
CASE TRIM LENGTH: 1.740"

The 7x45 Ingram is based on a 223 case necked up to 7mm with a 45 degree shoulder and less body taper than its parent cartridge case. This cartridge is very similar to the 7mm TCU. The only significant difference in the two cartridges is the shoulder angle. The 7x45mm has a 45 degree angle while the 7mm TCU has a 40 degree shoulder. The sharp shoulder angle does require extra care in seating bullets to prevent shoulders from collapsing.

Metallic Silhouette Shooting has become a very popular sport in recent years and this wildcat cartridge as developed by Dave Ingram is one of the results of the shooters' demands for flat shooting cartridges. Adequacy of the cartridge on the distant 200 meter Rams is good, with few targets failing to topple.

This cartridge is quite efficient; it provides good velocity from a short barrel with small charges of powder. During our testing all powders listed gave good results, while H322 and IMR 4895 provided the best uniformity and accuracy.

120 GRAIN BULLETS:

SECTIONAL DENSITY:	.213
DIAMETER:	.284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 2.600"



#2811 SSSP

Ballistic Coefficient — .350
C.O.L. — 2.600"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 2.600"



POWDER	VELOCITY						
	2000 fps	2100 fps	2200 fps	2250 fps	2300 fps	2350 fps	2400 fps
RL-7	20.4 gr.	21.5 gr.	22.6 gr.	23.1 gr.			
H322	23.5 gr.	24.5 gr.	25.6 gr.	26.1 gr.	26.6 gr.	27.1 gr.	
IMR 3031	24.9 gr.	25.8 gr.	26.7 gr.	27.2 gr.	27.6 gr.		
WIN 748			28.7 gr.	29.3 gr.	30.0 gr.	30.6 gr.	31.2 gr.
IMR 4895	26.6 gr.	27.9 gr.	29.1 gr.	29.7 gr.	30.4 gr.		
BL-C2		29.6 gr.	31.1 gr.	31.8 gr.	32.5 gr.		

See Ballistics Tables on pages 97-99, 100-102, 396-397, 397-398, Vol. II



Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 2.685"

**#2825 BTSP**

Ballistic Coefficient — .453
C.O.L. — 2.685"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2150 fps	2200 fps	2250 fps
RL-7	20.2 gr.	21.6 gr.				
H-322	23.5 gr.	24.5 gr.	25.6 gr.	26.1 gr.	26.6 gr.	
IMR 3031	24.4 gr.	25.4 gr.	26.3 gr.	26.7 gr.	27.2 gr.	27.7 gr.
IMR 4895	26.1 gr.	27.3 gr.	28.5 gr.	29.1 gr.	29.7 gr.	
WIN 748		27.2 gr.	28.6 gr.	29.3 gr.	30.0 gr.	30.6 gr.
BL-C2	27.9 gr.	29.2 gr.	30.6 gr.	31.2 gr.	31.9 gr.	

See Ballistics Tables on pages 102-104, 107-109, 398-399, 399-400, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.675"

**#2835 RN**

Ballistic Coefficient — .279
C.O.L. — 2.675"

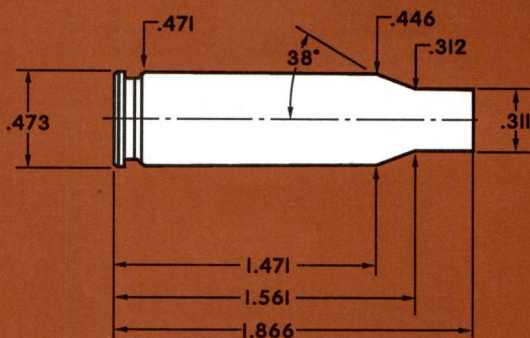


POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps
H-322	22.0 gr.	23.2 gr.	24.4 gr.	25.0 gr.		
IMR 3031	23.0 gr.	24.1 gr.	25.2 gr.	25.7 gr.	26.2 gr.	
WIN 748		25.7 gr.	27.1 gr.	27.8 gr.	28.4 gr.	29.1 gr.
IMR 4895	25.0 gr.	26.2 gr.	27.4 gr.	28.0 gr.	28.6 gr.	
BL-C2	26.1 gr.	27.5 gr.	28.9 gr.	29.6 gr.	30.3 gr.	31.0 gr.

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II



Indicates maximum load • use with caution



7mm IHMSA

TEST PISTOL: WICHITA
BARREL: 15", 1 in 10" TWIST
CASE: IHMSA
PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.670"
MAX. CASE LENGTH: 1.866"
CASE TRIM LENGTH: 1.856"

The sport of silhouette shooting probably spawned more wildcats than any other period in recent times. Foremost among the developer of these wildcats was Elgin Gates, the late president and one of the founders of IHMSA. One of his most popular cartridges is the 7mm IHMSA (International Handgun Metallic Silhouette Association), formed from 300 Savage cases. It is one of the most accurate and successful rounds in silhouette shooting, easily hitting and knocking over the distant rams.

In our testing, H322 and WIN 748 gave excellent accuracy with all bullets with WIN 748 giving slightly higher velocities.

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP
Ballistic Coefficient — .350
C.O.L. — 2.555"



#2811 SSSP
Ballistic Coefficient — .350
C.O.L. — 2.555"



#2815 HP
Ballistic Coefficient — .334
C.O.L. — 2.555"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	33.2 gr.	34.3 gr.	35.4 gr.	36.4 gr.	
H322	33.0 gr.	34.3 gr.	35.5 gr.	36.8 gr.	
IMR 4895	34.9 gr.	36.2 gr.	37.5 gr.	38.8 gr.	
IMR 4064	35.8 gr.	36.8 gr.	37.8 gr.	38.9 gr.	39.9 gr.
WIN 748	36.7 gr.	38.0 gr.	39.2 gr.	40.5 gr.	41.7 gr.

See Ballistics Tables on pages 97-99, 100-102, 396-397, 397-398, Vol. II



Indicates maximum load • use with caution

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 2.655"



#2825 BTSP

Ballistic Coefficient — .453
C.O.L. — 2.655"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	31.2 gr.	32.2 gr.	33.3 gr.	34.4 gr.	35.5 gr.
H322	30.7 gr.	32.1 gr.	33.6 gr.	35.0 gr.	
IMR 4895	32.7 gr.	34.0 gr.	35.3 gr.	36.6 gr.	37.9 gr.
IMR 4064	33.9 gr.	35.1 gr.	36.2 gr.	37.3 gr.	38.4 gr.
WIN 748		36.9 gr.	38.1 gr.	39.4 gr.	40.6 gr.

See Ballistics Tables on pages 102-104, 107-109, 398-399, 399-400, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.670"



#2835 RN

Ballistic Coefficient — .279
C.O.L. — 2.568"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	29.8 gr.	31.1 gr.	32.3 gr.	33.5 gr.	
H322	28.9 gr.	30.7 gr.	32.5 gr.	34.3 gr.	
IMR 4895	31.4 gr.	32.7 gr.	34.0 gr.	35.2 gr.	
IMR 4064	32.2 gr.	33.5 gr.	34.7 gr.	35.9 gr.	37.2 gr.
WIN 748	33.8 gr.	35.2 gr.	36.6 gr.	37.9 gr.	39.3 gr.

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II

Indicates maximum load • use with caution

162 GRAIN BULLETS:

SECTIONAL DENSITY:	.287
DIAMETER:	.284"

#2840 BTHP Match
Ballistic Coefficient — .534
C.O.L. — 2.670"



#2845 BTSP
Ballistic Coefficient — .514
C.O.L. — 2.670"

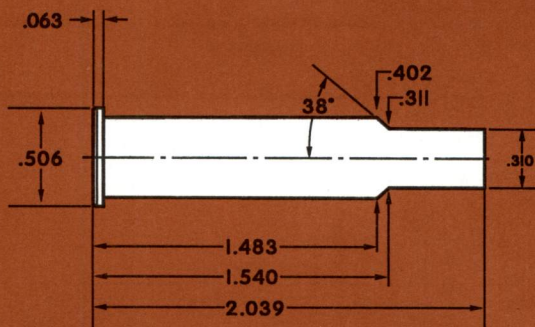


POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	29.2 gr.	30.6 gr.	31.9 gr.	33.3 gr.	
H322	30.1 gr.	31.5 gr.	32.9 gr.		
IMR 4895	31.2 gr.	32.4 gr.	33.7 gr.	34.9 gr.	
IMR 4064	32.1 gr.	33.3 gr.	34.5 gr.	35.7 gr.	36.9 gr.
WIN 748	33.5 gr.	34.8 gr.	36.1 gr.	37.4 gr.	38.7 gr.
BL-C2	34.1 gr.	35.7 gr.	37.2 gr.	38.8 gr.	

See Ballistics Tables on pages 114-116, 116-118, 401-402, 402-403, Vol. II



Indicates maximum load • use with caution



7mm INTERNATIONAL RIMMED

TEST PISTOL: T/C CONTENDER
 BARREL: 10", 1 in 10" TWIST
 CASE: HORNADY/FRONTIER REF.
 PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
 MAXIMUM C.O.L.: 2.835"
 MAX. CASE LENGTH: 2.039"
 CASE TRIM LENGTH: 2.029"

Silhouette shooters have tried a number of case designs, searching for the perfect combination of power, accuracy and acceptable recoil. While the definition of perfect may differ from shooter to shooter, some shooters feel that Elgin Gates' intermediate cartridge, the 7mm International Rimmed may fit the bill. It falls in between the 7mm TCU and the 7mm IHMSA. The 7mm International Rimmed is formed from the 30-30 Winchester case. Reloaders can simply run a lubricated 30-30 case in a full length 7mm International Rimmed sizing die, fire using a starting load to fire form, and reload as normal. These fire forming loads can be used as practice loads. The introduction of the 7-30 Waters has affected the popularity of the 7mm International Rimmed. The 7-30 Waters, also formed from the 30-30 Winchester, is ballistically very similar but offers factory ammunition and cases.

Fourteen inch barreled guns produce 100 to 150 fps increases in velocity. In our testing, WIN 748 and H335 produced top velocities.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP
Ballistic Coefficient — .279
C.O.L. — 2.750"



POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
H322	29.2 gr.	30.5 gr.	31.8 gr.	33.2 gr.	
H335	29.4 gr.	31.5 gr.	33.6 gr.	35.7 gr.	
WIN 748	36.0 gr.	37.4 gr.	38.8 gr.	40.2 gr.	41.6 gr.
BL-C2	36.9 gr.	38.2 gr.	39.5 gr.	40.8 gr.	42.0 gr.

See Ballistics Tables on pages 95-97, Vol. II

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 2.800"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 2.800"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
H322	23.4 gr.	25.2 gr.	27.1 gr.	28.9 gr.	
IMR 3031	24.5 gr.	25.6 gr.			
IMR 4895	25.4 gr.	26.7 gr.	27.9 gr.		
H335		26.5 gr.	28.2 gr.	30.0 gr.	31.7 gr.
IMR 4064	27.3 gr.	28.5 gr.			
WIN 748	29.7 gr.	31.1 gr.	32.5 gr.	33.9 gr.	35.3 gr.
BL-C2	30.2 gr.	31.7 gr.	33.3 gr.	34.9 gr.	

See Ballistics Tables on pages 102-104, 107-109, 398-399, 399-400, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.835"



#2835 RN

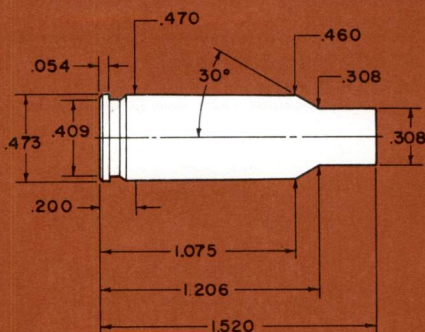
Ballistic Coefficient — .279
C.O.L. — 2.775"



POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
H322	22.2 gr.	23.9 gr.	25.6 gr.	27.3 gr.	
IMR 3031	23.4 gr.	24.6 gr.	25.8 gr.		
H335		24.2 gr.	27.9 gr.	28.8 gr.	30.5 gr.
IMR 4895	24.2 gr.	25.7 gr.	27.2 gr.		
IMR 4064	26.1 gr.	27.5 gr.			
WIN 748	27.6 gr.	29.2 gr.	30.8 gr.	32.4 gr.	
BL-C2	28.3 gr.	30.0 gr.	31.7 gr.	33.4 gr.	

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II

 Indicates maximum load • use with caution



7mm BR REMINGTON

PISTOL: REMINGTON XP-100
BARREL: 15", 1 in 10" TWIST
CASE: REMINGTON BR
PRIMER: REMINGTON 7 $\frac{1}{2}$

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.375"
MAX. CASE LENGTH: 1.520"
CASE TRIM LENGTH: 1.510"

Metallic silhouette shooting has grown substantially in a short period of time. Remington realized the need for a commercial "unlimited" gun and in 1980 introduced the 7mm BR Remington in their XP-100. This cartridge case has been used by bench rest people in both 22 caliber and 6mm chamberings. The cartridge is based on a necked down 308 case with a small rifle primer pocket, shortened to a length of 1.520" with a shoulder angle of 30 degrees.

Earlier, cases had to be trimmed and reformed to produce cartridges. However, Remington currently offers match quality cases that incorporate the small primer pocket.

In appearance, the 7mm Ingram should have less case capacity by a substantial margin, but in truth the usable difference is about three per cent. Our 7mm BR could not reach the velocities of our 7mm Ingram and primary reasons relate to the lead of the two firearms. The 7mm Ingram had a significantly longer lead which allowed bullets to be seated farther out of the case; this lowers pressures and increases case capacity for greater velocity.

The 7mm BR is an excellent choice for the silhouette shooter; efficient and effective use of small charges of powder produce enough velocity for the 200 meter range. Best results were achieved with Winchester 748 during our testing. Hunters also report good success with this cartridge up to deer sized game.

100 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.177
.284"

2800 HP

Ballistic Coefficient — .279
C.O.L. — 2.200"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2550 fps	2600 fps
IMR 4198	22.3 gr.	23.4 gr.	24.4 gr.	25.5 gr.	26.0 gr.	
RL-7	23.5 gr.	24.8 gr.	26.1 gr.	27.4 gr.	28.0 gr.	
H322	26.3 gr.	27.5 gr.	28.8 gr.	30.1 gr.	30.7 gr.	31.3 gr.
IMR 4895	28.0 gr.	29.4 gr.	30.9 gr.	32.3 gr.	33.0 gr.	33.7 gr.
AA 2230	29.7 gr.	31.0 gr.	32.3 gr.	33.5 gr.		
WIN 748	31.5 gr.	32.8 gr.	34.0 gr.	35.1 gr.		

See Ballistics Tables on pages 95-97, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.213
.284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 2.330"



#2811 SSSP

Ballistic Coefficient — .350
C.O.L. — 2.330"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 2.350"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2250 fps	2300 fps	2350 fps
H322	24.7 gr.	25.9 gr.	27.0 gr.	27.6 gr.	28.2 gr.	
IMR 3031	26.2 gr.	27.3 gr.	28.4 gr.	28.9 gr.	29.5 gr.	30.0 gr.
AA 2230	26.5 gr.	28.0 gr.	29.5 gr.	30.3 gr.	31.0 gr.	
IMR 4895	27.6 gr.	28.9 gr.	30.3 gr.	30.9 gr.	31.6 gr.	
WIN 748		29.2 gr.	30.6 gr.	31.2 gr.	31.9 gr.	32.6 gr.
BL-C2	29.8 gr.	31.2 gr.	32.6 gr.	33.2 gr.	33.9 gr.	

See Ballistics Tables on pages 97-99, 100-102, 396-397, 397-398, Vol. II

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP
Ballistic Coefficient — .392
C.O.L. — 2.330"



#2825 BTSP
Ballistic Coefficient — .453
C.O.L. — 2.330"



POWDER	VELOCITY					
	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps
H322	24.0 gr.	25.2 gr.	25.8 gr.	26.4 gr.	26.9 gr.	
IMR 3031	25.4 gr.	26.5 gr.	27.0 gr.	27.6 gr.	28.1 gr.	
AA 2230	25.9 gr.	27.4 gr.	28.2 gr.	28.9 gr.		
IMR 4895	26.8 gr.	28.0 gr.	28.7 gr.	29.3 gr.	29.9 gr.	
WIN 748	27.2 gr.	28.4 gr.	29.0 gr.	29.6 gr.	30.2 gr.	30.8 gr.
BL-C2	28.6 gr.	30.0 gr.	30.7 gr.	31.4 gr.		

See Ballistics Tables on pages 102-104, 107-109, 398-399, 399-400, Vol. II

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP
Ballistic Coefficient — .433
C.O.L. — 2.320"



#2835 RN
Ballistic Coefficient — .279
C.O.L. — 2.320"



POWDER	VELOCITY					
	1800 fps	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps
H322	23.1 gr.	23.9 gr.				
IMR 3031	23.8 gr.	25.0 gr.	25.5 gr.	26.1 gr.	26.7 gr.	
AA 2230	25.1 gr.	26.5 gr.	27.2 gr.	27.9 gr.		
IMR 4895	25.5 gr.	26.9 gr.	27.6 gr.	28.2 gr.		
WIN 748		26.9 gr.	27.6 gr.	28.3 gr.	29.0 gr.	29.7 gr.
BL-C2	27.7 gr.	28.9 gr.	29.5 gr.	30.0 gr.	30.6 gr.	

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II

162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP Match
Ballistic Coefficient — .534
C.O.L. — 2.375"



#2845 BTSP
Ballistic Coefficient — .462
C.O.L. — 2.375"

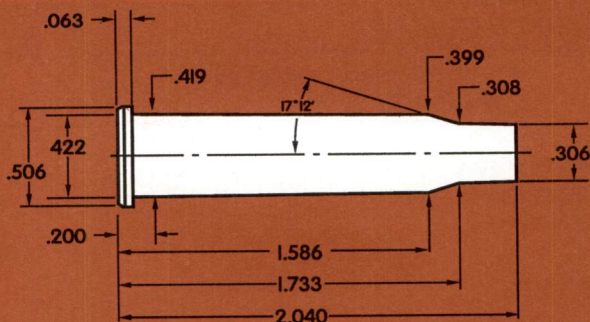


POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	1950 fps	2000 fps	2050 fps
H322	21.6 gr.	22.7 gr.	23.9 gr.	24.5 gr.		
IMR 3031	22.7 gr.	23.7 gr.	24.8 gr.	25.4 gr.	25.9 gr.	
AA 2230	23.6 gr.	25.0 gr.	26.4 gr.	27.2 gr.		
IMR 4895	23.7 gr.	25.2 gr.	26.6 gr.	27.3 gr.	28.0 gr.	
WIN 748		25.6 gr.	26.9 gr.	27.6 gr.	28.2 gr.	28.9 gr.
BL-C2		26.9 gr.	28.3 gr.	29.1 gr.	29.8 gr.	30.6 gr.

See Ballistics Tables on pages 114-116, 116-118, 401-402, 402-403, Vol. II



Indicates maximum load • use with caution



7-30 WATERS

PISTOL: T/C CONTENDER
BARREL: 14", 1 in 9½"
CASE: HORNADY/FRONTIER REF.
PRIMER: FEDERAL 210

BULLET DIAMETER: .284"
MAXIMUM C.O.L.: 2.830"
MAX. CASE LENGTH: 2.040"
CASE TRIM LENGTH: 2.030"

Ken Waters, well known firearm guru, felt the need for a new hunting cartridge with better ballistics than the .30-30 Winchester yet using the .30-30 case and the tubular magazines and actions of the .30-30 Winchester. The final design of this new cartridge was a .30-30 case necked down to 7mm (.284") and "blown out," giving more powder capacity than the parent case. In 1984 the first rifles and cartridges were manufactured. The original firearm was the U.S. Repeating Arms, Model 94 Angle Eject with a 24" barrel. Shortly, Thompson Contender produced firearms for the 7-30 Waters including their Contender pistol. This cartridge has become quite popular for silhouette shooters and hunters. It offers the 7mm bore size, and therefore a wide variety of excellent bullets, factory ammunition and cases.

100 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .284"

#2800 HP

Ballistic Coefficient — .279
C.O.L. — 2.760"



POWDER	VELOCITY						
	2400 fps	2450 fps	2500 fps	2550 fps	2600 fps	2650 fps	2700 fps
AA 2460		31.7 gr.	32.9 gr.	34.0 gr.	35.1 gr.	36.3 gr.	37.4 gr.
H322	30.1 gr.	31.5 gr.	32.9 gr.	34.4 gr.			
H335	31.7 gr.	33.0 gr.	34.3 gr.	35.5 gr.	36.2 gr.	36.9 gr.	
H 4895	33.4 gr.	34.1 gr.	34.8 gr.	35.5 gr.	36.2 gr.	36.9 gr.	
IMR 4064	36.0 gr.	36.7 gr.	37.5 gr.	38.3 gr.	39.1 gr.	39.8 gr.	
WIN 748	36.6 gr.	37.3 gr.	37.9 gr.	38.5 gr.	39.1 gr.	39.7 gr.	40.3 gr.

See Ballistics Tables on pages 95-97, Vol. II

120 GRAIN BULLETS:

SECTIONAL DENSITY: .213
DIAMETER: .284"

#2810 SP

Ballistic Coefficient — .350
C.O.L. — 2.775"



#2811 SSSP

Ballistic Coefficient — .350
C.O.L. — 2.775"



#2815 HP

Ballistic Coefficient — .334
C.O.L. — 2.775"



POWDER	VELOCITY						
	2200 fps	2250 fps	2300 fps	2350 fps	2400 fps	2450 fps	2500 fps
H322	28.0 gr.	29.0 gr.	29.9 gr.	30.9 gr.	31.9 gr.		
AA 2460	30.7 gr.	31.6 gr.	32.5 gr.	33.4 gr.	34.2 gr.	35.1 gr.	36.0 gr.
H4895	31.0 gr.	31.8 gr.	32.6 gr.	33.3 gr.			
H335	30.7 gr.	31.7 gr.	32.7 gr.	33.7 gr.	34.8 gr.		
IMR 4064	33.1 gr.	33.9 gr.	34.7 gr.	35.4 gr.	36.2 gr.	37.0 gr.	
WIN 748	33.9 gr.	34.7 gr.	35.5 gr.	36.2 gr.	37.0 gr.	37.8 gr.	38.5 gr.

See Ballistics Tables on pages 97-99, 100-102, 396-397, 397-398, Vol. II

139 GRAIN BULLETS:

SECTIONAL DENSITY: .246
DIAMETER: .284"

#2820 SP

Ballistic Coefficient — .392
C.O.L. — 2.830"



#2822 FP

Ballistic Coefficient — .196
C.O.L. — 2.565"



#2825 BTSP

Ballistic Coefficient — .453
C.O.L. — 2.830"



POWDER	VELOCITY						
	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps	2250 fps	2300 fps
H322	26.3 gr.	27.1 gr.	28.0 gr.	28.8 gr.	29.7 gr.	30.5 gr.	
AA 2460	27.8 gr.	28.8 gr.	29.7 gr.	30.7 gr.	31.6 gr.	32.5 gr.	33.5 gr.
H4895	28.4 gr.	29.2 gr.	30.0 gr.	30.8 gr.	31.6 gr.		
H335	28.8 gr.	29.7 gr.	30.6 gr.	31.5 gr.	32.4 gr.	33.2 gr.	
IMR 4064	30.2 gr.	31.0 gr.	31.8 gr.	32.6 gr.	33.4 gr.	34.2 gr.	35.0 gr.
WIN 748	30.6 gr.	31.4 gr.	32.1 gr.	32.9 gr.	33.7 gr.	34.4 gr.	35.2 gr.

See Ballistics Tables on pages 102-104, 104-107, 107-109, 398-399, 399-400, Vol. II



Indicates maximum load • use with caution

154 GRAIN BULLETS:

SECTIONAL DENSITY: .273
DIAMETER: .284"

#2830 SP

Ballistic Coefficient — .433
C.O.L. — 2.830"



#2835 RN

Ballistic Coefficient — .279
C.O.L. — 2.818"



POWDER	VELOCITY						
	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps
H322	25.6 gr.	26.4 gr.	27.3 gr.	28.1 gr.	28.9 gr.		
H4895	27.3 gr.	28.1 gr.	28.8 gr.	29.6 gr.	30.4 gr.		
AA 2460		28.1 gr.	29.0 gr.	29.9 gr.	30.8 gr.	31.7 gr.	32.6 gr.
H335	27.9 gr.	28.7 gr.	29.5 gr.	30.4 gr.	31.2 gr.		
IMR 4064	28.9 gr.	29.7 gr.	30.5 gr.	31.3 gr.	32.2 gr.	33.0 gr.	
WIN 748	29.8 gr.	30.5 gr.	31.1 gr.	31.7 gr.	32.4 gr.	33.0 gr.	33.7 gr.

See Ballistics Tables on pages 109-111, 111-114, 400-401, Vol. II

162 GRAIN BULLETS:

SECTIONAL DENSITY: .287
DIAMETER: .284"

#2840 BTHP Match

Ballistic Coefficient — .534
C.O.L. — 2.830"



#2845 BTSP

Ballistic Coefficient — .514
C.O.L. — 2.830"



POWDER	VELOCITY						
	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps
H322	25.8 gr.	26.6 gr.	27.5 gr.				
H4895	27.8 gr.	28.6 gr.	29.4 gr.	30.2 gr.			
AA 2460		28.5 gr.	29.4 gr.	30.3 gr.	31.1 gr.	32.0 gr.	
H335	27.6 gr.	28.6 gr.	29.6 gr.	30.6 gr.			
IMR 4064	28.9 gr.	29.6 gr.	30.2 gr.	30.9 gr.	31.5 gr.	32.2 gr.	
WIN 748	30.3 gr.	31.0 gr.	31.8 gr.	32.5 gr.	33.2 gr.	33.9 gr.	34.6 gr.

See Ballistics Tables on pages 114-116, 116-118, 401-402, 402-403, Vol. II

175 GRAIN BULLETS:

SECTIONAL DENSITY:	.310
DIAMETER:	.284"

#2850 SP
Ballistic Coefficient — .462
C.O.L. — 2.815"



#2855 RN
Ballistic Coefficient — .285
C.O.L. — 2.805"

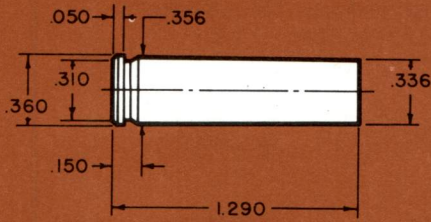


POWDER	VELOCITY						
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps	1950 fps	2000 fps
H322	22.9 gr.	23.7 gr.	24.5 gr.	25.3 gr.	26.0 gr.		
AA 2460			26.0 gr.	27.1 gr.	28.1 gr.	29.2 gr.	30.2 gr.
H335		25.5 gr.	26.5 gr.	27.6 gr.	28.6 gr.	29.5 gr.	
H4895	24.5 gr.	25.4 gr.	26.4 gr.	27.3 gr.	28.3 gr.		
IMR 4064	25.7 gr.	26.5 gr.	27.4 gr.	28.2 gr.	29.0 gr.	29.8 gr.	30.6 gr.
WIN 748	27.3 gr.	28.1 gr.	28.9 gr.	29.7 gr.	30.4 gr.	31.2 gr.	32.0 gr.

See Ballistics Tables on pages 118-120, 120-123, 403-404, Vol. II



Indicates maximum load • use with caution



30 M1 CARBINE (PISTOL)

PISTOL: RUGER BLACKHAWK
BARREL: 7½", 1 in 20" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WSR

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 1.680"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

The 30 M1 Carbine easily ranks within the top twenty most frequently reloaded cartridges. Such popularity is difficult to explain in terms of the performance characteristics of the 30 M1. The 32 Winchester Self Loading cartridge from which it was developed was considered obsolete as long as fifty years ago; and the 30 M1, even when shot from a rifle, is still a marginal performer on game.

Many excellent commercial cartridges presented in this handbook never enjoyed widespread popularity because of the firearms chambered for them. The 30 M1 Carbine, no landmark development in the history of cartridge design, owes its appeal to the easy handling semi-automatic military carbine for which it was developed in 1940. The U.S. military reckoned on the eve of WWII that many of its ground troops would be better off hitting something with the light, quick shooting 30 M1 Carbine than hitting nothing at all with the potent 45 caliber semi-auto sidearm they might otherwise have been issued.

Now, ironically, the cartridge developed as an alternative to the 45 ACP is itself a pistol cartridge. Ruger in 1971 began chambering its heavy framed Blackhawk for the 30 M1 Carbine cartridge. IAI of Irwindale, California started producing a semi-automatic pistol for this round in 1989. Fanciers of the Carbine can enjoy a sidearm companion to it. (CAUTION: We have observed failures of complete ignition with factory ammunition which could leave a bullet in the barrel. Use care when shooting this cartridge in a handgun.)

110 GRAIN BULLETS:

SECTIONAL DENSITY:	.166
DIAMETER:	.308"

#3015 RN
Ballistic Coefficient — .150
C.O.L. — 1.680"



#3017 FMJ-RN
Ballistic Coefficient — .178
C.O.L. — 1.680"

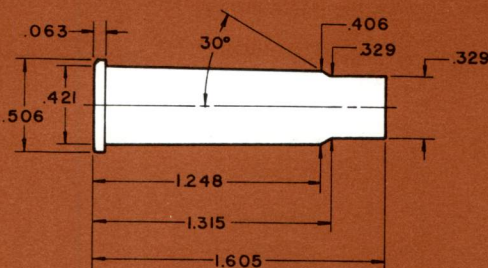


POWDER	VELOCITY							
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
H110	9.3 gr.	9.8 gr.	10.3 gr.	10.8 gr.	11.3 gr.	11.8 gr.	12.3 gr.	12.8 gr.
2400	9.6 gr.	10.2 gr.	10.7 gr.	11.3 gr.	11.9 gr.	12.5 gr.	13.1 gr.	13.7 gr.

See Ballistics Tables on pages 275-276, Vol. II



Indicates maximum load • use with caution



30 HERRETT

PISTOL: THOMPSON CENTER
BARREL: 10", 1 in 14" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: FEDERAL 210

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.320"
MAX. CASE LENGTH: 1.605"
CASE TRIM LENGTH: 1.595"

The 30 Herrett originated as the product of Steve Herrett and Bob Milek in 1972 and is one of the most potent of the calibers offered by Thompson/Center. The original intent of the 30 Herrett was to create a cartridge that provided ample power for big game with a case small enough to provide good loading density, and large enough to obtain good velocities from a 10" barrel; the result was a very efficient cartridge.

Cases for the 30 Herrett are formed from 30-30 cases. Sizing is a critical step in proper forming of 30 Herrett cases. If the case is not sized enough and closing is difficult, accuracy will suffer and pressure signs will appear prematurely. If the case is sized too much, excessive head space creates misfires and unnecessary case stretch, which diminishes case life. To eliminate the aforementioned problems, the size die should first be adjusted so the action will not close on the sized case. The reloader must then turn the die in approximately a sixteenth of a revolution at a time, checking the sized case in the action after each adjustment. When the action clicks shut easily, the die is properly adjusted.

Hornady's 110 and 130 grain Spire Point bullets gave excellent accuracy in our barrel. Best results were obtained using Winchester 296 and H-4227 with the 110 Spire Point. Best accuracy and uniformity using the 130 grain Spire Point was obtained with Winchester 680 powder. For the Metallic Silhouette Shooter, the Hornady 150 grain Spire Point and 23 grains of Winchester 680 makes an excellent Ram load. With Hornady's dependable Spire Point bullets, especially the 130 gr. SSSP which is designed for pistol velocities, the 30 Herrett is also a top choice for the Handgun Hunter.

110 GRAIN BULLETS:

SECTIONAL DENSITY:	.166
DIAMETER:	.308"

#3010 SP
Ballistic Coefficient — .265
C.O.L. — 2.320"



#3015 RN
Ballistic Coefficient — .150
C.O.L. — 2.320"



#3017 FMJ
Ballistic Coefficient — .178
C.O.L. — 2.320"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
2400	18.0 gr.	19.3 gr.	20.6 gr.	21.9 gr.	
WIN 296	18.7 gr.	20.1 gr.	21.5 gr.	22.9 gr.	24.3 gr.
H4227	20.2 gr.	21.6 gr.	23.9 gr.	24.5 gr.	25.9 gr.
SR 4759	20.4 gr.	22.1 gr.			
IMR 4227	21.6 gr.	22.5 gr.	23.4 gr.	24.2 gr.	25.1 gr.
WIN 680	21.4 gr.	22.7 gr.	23.9 gr.	25.1 gr.	26.4 gr.
IMR 4198	23.7 gr.	25.3 gr.	26.8 gr.	28.4 gr.	

See Ballistics Tables on pages 124-127, 127-128, 128-129, 404-405, Vol. II



Indicates maximum load • use with caution

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP

Ballistic Coefficient — .295
C.O.L. — 2.320"



#3021 SSSP

Ballistic Coefficient — .295
C.O.L. — 2.320"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
WIN 296	17.6 gr.	18.9 gr.	20.1 gr.	21.4 gr.	
IMR 4227	18.7 gr.	19.9 gr.	21.2 gr.	22.5 gr.	
H4227	19.5 gr.	20.6 gr.	21.8 gr.	22.9 gr.	24.0 gr.
WIN 680	18.7 gr.	20.3 gr.	21.9 gr.	23.6 gr.	25.2 gr.
SR 4759	18.5 gr.	20.5 gr.	22.4 gr.		
IMR 4198		22.8 gr.	24.3 gr.	25.9 gr.	27.4 gr.

See Ballistics Tables on pages 129-132, 405-406, Vol. II

30 HERRETT



Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP
Ballistic Coefficient — .338
C.O.L. — 2.310"



#3033 BTSP
Ballistic Coefficient — .349
C.O.L. — 2.310"



#3035 RN
Ballistic Coefficient — .186
C.O.L. — 2.310"



#3037 FMJ-BT
Ballistic Coefficient — .398
C.O.L. — 2.310"

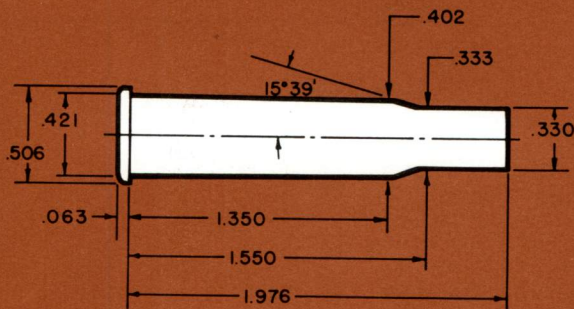


POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
WIN 296	15.8 gr.	17.2 gr.	18.6 gr.	20.0 gr.	
H4227		18.0 gr.	19.6 gr.	21.1 gr.	
WIN 680	17.2 gr.	18.7 gr.	20.1 gr.	21.6 gr.	23.0 gr.
IMR 4227	18.3 gr.	19.4 gr.	20.4 gr.	21.5 gr.	
IMR 4198	20.0 gr.	21.4 gr.	22.8 gr.	24.2 gr.	25.7 gr.

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, 406-407, 407-409, 409-410, Vol. II



Indicates maximum load • use with caution



30-30

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .308"
MAXIMUM C.O.L.: 2.715"
MAX. CASE LENGTH: 2.039"
CASE TRIM LENGTH: 2.019"

Uniformity from shot to shot is necessary for accuracy with any firearm. This uniformity was never really obtained throughout our experimentation. To explain this problem, we need only to look at case capacity versus barrel length. The 30/30 case was designed to perform efficiently in a rifle, which is the major problem.

With the slow burning powders that give excellent results in a rifle, the opposite is true in the 10" handgun. Too much powder is left unburned, which only contributes to poor accuracy and loud muzzle blast. When powders that are fast enough to give suitable velocities are used, poor loading density is the result, leading to wide velocity variations and corresponding indifferent accuracy. Also, to insure good ignition, accuracy and case life, cases should be neck sized or partially resized which allows headspacing on the shoulder of the case.

The powders listed, performed the best of those tested during our experimentation. Accurate Arms' 2460 performed the best with the 110 grain Spire Point while Hodgdon's H335 and BL-C(2) gave good results with the 130 grain single shot Spire Point and the 150 grain Spire Point. The 130 grain single shot Spire Point is probably the best all around choice for hunting with the 30-30 Thompson Center Contender. Results with our 30/30 barrel were never on par with our 30 Herrett barrel, a more efficient cartridge.

110 GRAIN BULLETS:

SECTIONAL DENSITY:	.166
DIAMETER:	.308"

#3010 SP

Ballistic Coefficient — .256
C.O.L. — 2.660"



#3015 RN

Ballistic Coefficient — .150
C.O.L. — 2.660"



#3017 FMJ-RN

Ballistic Coefficient — .178
C.O.L. — 2.660"



POWDER	VELOCITY					
	1700 fps	1800 fps	1850 fps	1900 fps	1950 fps	2000 fps
AA 5744	21.1 gr.	22.5 gr.	23.2 gr.			
AA 2460	26.2 gr.	27.9 gr.	28.7 gr.	29.6 gr.	30.4 gr.	31.3 gr.
Scot 3032	31.2 gr.	32.9 gr.	33.7 gr.	34.6 gr.	35.3 gr.	
H335	33.4 gr.	35.1 gr.	36.0 gr.	36.9 gr.	37.7 gr.	
WIN 748	34.6 gr.	37.3 gr.	38.6 gr.	39.9 gr.		

See Ballistics Tables on pages 124-127, 127-128, 128-129, 404-405, Vol. II



Indicates maximum load • use with caution

130 GRAIN BULLETS:

SECTIONAL DENSITY: .196
DIAMETER: .308"

#3020 SP

Ballistic Coefficient — .295
C.O.L. — 2.660"



#3021 SSSP

Ballistic Coefficient — .295
C.O.L. — 2.660"



POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1800 fps	1850 fps
Scot 4197	22.4 gr.	23.9 gr.	25.5 gr.	27.1 gr.	
IMR 4895	25.4 gr.	26.5 gr.	27.7 gr.	28.9 gr.	
AA 2460		25.9 gr.	27.8 gr.	29.7 gr.	30.6 gr.
Scot 3032		28.0 gr.	29.9 gr.	31.9 gr.	
H335		30.0 gr.	31.5 gr.	32.9 gr.	33.7 gr.
BL-C2		30.9 gr.	32.8 gr.	34.6 gr.	35.5 gr.
WIN 748		33.0 gr.	34.7 gr.	36.4 gr.	37.2 gr.

See Ballistics Tables on pages 129-132, 405-406, Vol. II



Indicates maximum load • use with caution

150 GRAIN BULLETS:

SECTIONAL DENSITY: .226
DIAMETER: .308"

#3031 SP
Ballistic Coefficient — .338
C.O.L. — 2.715"



#3033 BTSP
Ballistic Coefficient — .349
C.O.L. — 2.721"



#3035 RN
Ballistic Coefficient — .186
C.O.L. — 2.485"



#3037 FMJ-BT
Ballistic Coefficient — .398
C.O.L. — 2.743"

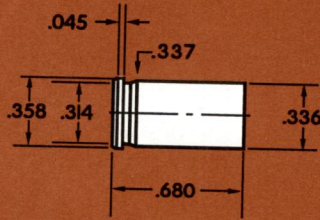


POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1750 fps	1800 fps
Scot 4197	23.0 gr.	24.9 gr.	26.8 gr.		
IMR 4895	25.5 gr.	26.8 gr.	28.1 gr.		
AA 2460		26.4 gr.	28.7 gr.	29.9 gr.	
H335		29.9 gr.	31.9 gr.	32.9 gr.	
BL-C2		30.6 gr.	32.8 gr.	33.9 gr.	35.0 gr.
WIN 748		33.7 gr.	35.9 gr.	37.0 gr.	

See Ballistics Tables on pages 132-134, 134-137, 137-139, 139-141, 406-407, 407-409, 409-410, Vol. II



Indicates maximum load • use with caution



32 ACP (7.65 BROWNING)

TEST PISTOL: MAUSER M 1914
BARREL: 3.6", 1 in 16" TWIST
CASE: FEDERAL
PRIMER: FEDERAL 100

BULLET DIAMETER: .311"
MAXIMUM C.O.L.: .970"
MAX. CASE LENGTH: .680"
CASE TRIM LENGTH: .670"

Also known as the 7.65 Browning, this small, semi-rimmed cartridge was designed by John Browning in 1899. This modestly powered cartridge has survived for a number of reasons. First, its relatively low operating pressure allows it to be used in a variety of handgun designs, most commonly compact, straight blow-back semi-automatic pistols. Second, its light recoil lends itself to new shooters or recoil sensitive shooters. Third, the compact pistols fit those with small hands. Although it lacks the power of the 9mm Luger, 380 Auto or even the .32 H&R Magnum, it is a minimal self-defense cartridge. What it lacks in power, it makes up in controllability and handiness. It is certainly much better than the 25 ACP for self defense.

As a self-protection weapon, a handgun must be reliable. Most pistols require a minimum of 800 fps for certain functioning. Accuracy can be surprisingly good. In our testing, Red Dot and Green Dot produced good results.

71 GRAIN BULLETS:

SECTIONAL DENSITY: .105
DIAMETER: .311"

#3200 FMJ-RN
Ballistic Coefficient — .118
C.O.L. — .970"

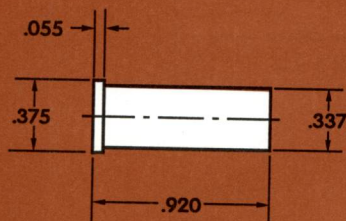


POWDER	VELOCITY					
	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
Red Dot	1.5 gr.	1.7 gr.	1.8 gr.	2.0 gr.	2.1 gr.	2.3 gr.
Bullseye	1.7 gr.	1.8 gr.	2.0 gr.	2.1 gr.	2.2 gr.	
HP-38	1.6 gr.	1.8 gr.	1.9 gr.	2.1 gr.	2.2 gr.	2.4 gr.
700-X	1.7 gr.	1.9 gr.	2.1 gr.	2.2 gr.		
Green Dot	1.8 gr.	2.0 gr.	2.1 gr.	2.2 gr.	2.3 gr.	2.5 gr.
WIN 231	2.1 gr.	2.2 gr.	2.4 gr.	2.5 gr.		

See Ballistics Tables on pages 276-277, Vol. II



Indicates maximum load • use with caution



32 S&W LONG

PISTOL: S&W MODEL 31
BARREL: 3", 1 in 18³/₄" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSP

BULLET DIA.: .312"-.314"
MAXIMUM C.O.L.: 1.185"
MAX. CASE LENGTH: .920"
CASE TRIM LENGTH: .910"

By the 1890's there were many small 32 caliber handguns. In 1896 Smith and Wesson introduced its new solid frame, "Hand-Ejector First Model," and a new cartridge to accompany it — the 32 S&W Long.

Although introduced as a new cartridge, the Long was clearly just an extension of an existing 32 H&R round, the new Long being just .02 inches longer and 10 grains heavier than the H&R version.

Colt jumped into the market by introducing a virtually identical handgun named the 32 Colt New Police. The differences between the S&W Long and Colt cartridges are minimal, existing only in bullet shape and powder charge. They can be used interchangeably, and either gun will shoot the shorter 32 Smith and Wesson.

Once considered adequate for police work, the 32 S&W Long is currently far more popular for small game hunting, and superior to the .22 rimfire for that purpose. Its excellent accuracy and light recoil made it a favorite for serious target shooters.

The early Smith and Wesson revolver was displaced in popularity as other manufacturers began to make high grade target autoloaders. Precision firearms, such as the Hammerli and Walther result in match grade accuracy with a minimum of recoil. In these firearms a HBWC bullet is seated nearly flush with the case mouth, extending no more than .01 inch beyond the case. Attempts to seat HBWCs further out can result in pressures higher than expected.

Whether you are a target shooter, a small game hunter or a recoil sensitive plinker, the 32 S&W Long is an accurate and economical cartridge.

In our testing, good results were obtained with Red Dot and Bullseye powders.

85 GRAIN BULLETS:

SECTIONAL DENSITY: .102
DIAMETER: .312"

#32050 HP/XTP

Ballistic Coefficient — .145

C.O.L. — 1.160"



POWDER	VELOCITY				
	550 fps	600 fps	650 fps	700 fps	750 fps
700-X	1.6 gr.	1.7 gr.	1.9 gr.	2.0 gr.	
HP-38	1.5 gr.	1.6 gr.	1.8 gr.	2.0 gr.	2.1 gr.
Red Dot	1.5 gr.	1.7 gr.	1.8 gr.	2.0 gr.	2.1 gr.
Bullseye	1.6 gr.	1.7 gr.	1.9 gr.	2.1 gr.	
Green Dot	1.8 gr.	2.0 gr.	2.1 gr.	2.3 gr.	
Unique	2.2 gr.	2.3 gr.	2.5 gr.	2.6 gr.	
WIN 231	2.0 gr.	2.2 gr.	2.4 gr.	2.6 gr.	2.8 gr.
AA #5	2.6 gr.	2.8 gr.	2.9 gr.	3.1 gr.	3.2 gr.

See Ballistics Tables on pages 277-279, Vol. II



Indicates maximum load • use with caution

90 GRAIN BULLETS:

SECTIONAL DENSITY:	.130
DIAMETER:	.314"

#3252 HBWC

Ballistic Coefficient — .040
C.O.L. — .920"



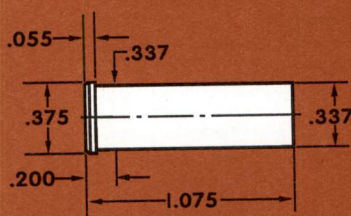
#3250 SWC

Ballistic Coefficient — .096
C.O.L. — 1.185"



POWDER	VELOCITY				
	550 fps	600 fps	650 fps	700 fps	750 fps
700-X	1.4 gr.	1.6 gr.	1.7 gr.	1.8 gr.	1.9 gr.
HP-38	1.4 gr.	1.6 gr.	1.7 gr.	1.9 gr.	
Bullseye	1.6 gr.	1.7 gr.	1.9 gr.	2.0 gr.	
Red Dot	1.5 gr.	1.7 gr.	1.8 gr.	2.0 gr.	2.1 gr.
Green Dot	1.7 gr.	1.9 gr.	2.1 gr.	2.2 gr.	
Unique	1.7 gr.	1.9 gr.	2.1 gr.	2.3 gr.	2.5 gr.
WIN 231	1.8 gr.	2.1 gr.	2.3 gr.	2.5 gr.	

See Ballistics Tables on pages 279-280, 280-281, Vol. II



32 H & R MAGNUM

PISTOL: H&R
BARREL: 4", 1 in 16" TWIST
CASE: FEDERAL
PRIMER: FEDERAL 100

BULLET DIA.: .312"-.314"
MAXIMUM C.O.L.: 1.360"
MAX. CASE LENGTH: 1.075"
CASE TRIM LENGTH: 1.065"

Shooters and hunters have wanted a high velocity, low recoiling cartridge for a long time. Some thought that the .32-20 would work, but since there are some older revolvers of questionable strength, the engineers at Harrington and Richardson and Federal decided on an entirely new cartridge the 32 H & R Magnum. Essentially, an elongated 32 S & W long case, it is loaded to much higher pressures and velocities. It is a useful cartridge for hunting small game, informal target shooting and home protection. Muzzle energy rivals 38 special loads, making it a cartridge useable for self defense. Recoil sensitive shooters will certainly appreciate this cartridge.

Several manufacturers produce pistols in 32 H & R including Ruger, Smith and Wesson and Dan Wesson. It is still a new cartridge but its popularity is growing.

85 GRAIN BULLETS:

SECTIONAL DENSITY: .102
DIAMETER: .312"

#32050 HP/XTP
Ballistic Coefficient — .145
C.O.L. — 1.360"



POWDER	VELOCITY				
	700 fps	800 fps	900 fps	950 fps	1000 fps
Red Dot	2.0 gr.	2.6 gr.	3.1 gr.	3.4 gr.	3.7 gr.
700-X	2.5 gr.	2.9 gr.	3.3 gr.	3.5 gr.	3.7 gr.
HP-38	2.6 gr.	3.1 gr.	3.6 gr.	3.8 gr.	
Unique	3.1 gr.	3.5 gr.	4.0 gr.	4.3 gr.	
WIN 231	3.0 gr.	3.6 gr.	4.2 gr.	4.5 gr.	
SR 4756	3.2 gr.	3.7 gr.	4.2 gr.		
Herco	3.0 gr.	3.6 gr.	4.2 gr.		
HS-5	4.1 gr.	4.8 gr.	5.6 gr.	6.0 gr.	
HS-6	4.3 gr.	4.9 gr.	5.6 gr.	6.0 gr.	
Blue Dot	4.4 gr.	5.0 gr.	5.7 gr.	6.0 gr.	
AA #7	4.7 gr.	5.5 gr.	6.3 gr.	6.7 gr.	

See Ballistics Tables on pages 277-279, Vol. II

 Indicates maximum load • use with caution

90 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .314"

#3252 HBWC

Ballistic Coefficient — .040

C.O.L. — 1.100"



#3250 SWC

Ballistic Coefficient — .096

C.O.L. — 1.360"

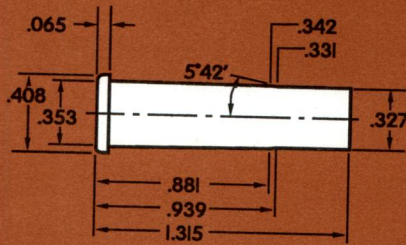


POWDER	VELOCITY				
	700 fps	750 fps	800 fps	850 fps	900 fps
Red Dot	1.8 gr.	2.0 gr.	2.3 gr.	2.5 gr.	2.8 gr.
Bullseye	2.2 gr.	2.4 gr.	2.6 gr.	2.8 gr.	3.1 gr.
HP-38	2.3 gr.	2.5 gr.	2.7 gr.	2.9 gr.	3.1 gr.
700-X	2.3 gr.	2.5 gr.	2.7 gr.	2.9 gr.	3.2 gr.
Herco	2.6 gr.	2.8 gr.	3.1 gr.	3.3 gr.	3.5 gr.
WIN 231	2.5 gr.	2.8 gr.	3.1 gr.	3.3 gr.	3.6 gr.
Unique	2.7 gr.	2.9 gr.	3.2 gr.	3.4 gr.	3.6 gr.

See Ballistics Tables on pages 279-280, 280-281, Vol. II



Indicates maximum load • use with caution



32-20 T/C PISTOL

TEST PISTOL: T/C CONTENDER
BARREL: 10' 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 100

BULLET DIAMETER: .312"
MAXIMUM C.O.L.: 1.550"
MAX. CASE LENGTH: 1.315"
CASE TRIM LENGTH: 1.305"

This data is for use only in Thompson/Center pistols and modern rifles in good condition. *It is not to be used in any older firearm!*

Introduced by Winchester in 1882, this cartridge has had a resurgence in popularity due to the introduction of several new firearms. One of these is the Thompson/Center Contender, mainly for use in NRA Hunter's Pistol and IHMSA Field Pistol Silhouette competition, but also used by some small game hunters.

The Thompson/Center Contender pistol has a barrel with a .308" groove diameter. However, shooting the .312" bullet offered no problems but as always, start your load development with the lowest load and work upwards. Care must be used in handling 32-20 cases as the brass is thin and necks are easily crumpled.

The 85 grain 32 caliber XTP Hollow Point is designed for ideal impact velocities of 750-1500 fps. Higher velocities might produce faster than desired expansion. If you are hunting small, edible game, you might want to reduce the muzzle velocity.

85 GRAIN BULLETS:

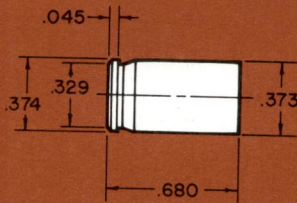
SECTIONAL DENSITY: .125
DIAMETER: .312"

#32050 HP/XTP
Ballistic Coefficient — .145
C.O.L. — 1.550"



POWDER	VELOCITY						
	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
Blue Dot	7.4 gr.	7.6 gr.	7.9 gr.	8.2 gr.	8.4 gr.	8.7 gr.	
2400	9.0 gr.	9.5 gr.	10.0 gr.	10.4 gr.	10.9 gr.	11.4 gr.	
WIN 296	11.7 gr.	12.2 gr.	12.8 gr.	13.4 gr.	13.9 gr.	14.5 gr.	15.0 gr.
IMR 4227	11.7 gr.	12.4 gr.	13.0 gr.	13.7 gr.	14.4 gr.	15.0 gr.	15.7 gr.

Indicates maximum load • use with caution



380 AUTOMATIC (9mm KURZ)

PISTOL: WALTHER PPK/s
BARREL: 3 $\frac{3}{4}$ ", 1 in 16" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 100

BULLET DIAMETER: .355"
MAXIMUM C.O.L.: .980"
MAX. CASE LENGTH: .680"
CASE TRIM LENGTH: .670"

The 380 Auto is a fine 9mm cartridge that serves as the official military and police service cartridge for many countries. It is regarded in the U.S. as an adequate defense and back up cartridge. Much of the popularity of the round can be credited to the many different manufacturers that chamber it. In the U.S., such firms as Indian Arms, Sterling Arms, and O.M.C. manufacture the 380 Auto with a host of European manufacturers also chambering the round.

Hornady makes two 9mm bullets that work very well in the 380; the 90 grain Jacketed Hollow Point and the 100 grain Full Metal Jacket. The 380 has sufficient power for hunting small game such as rabbits, but the firearms for which it is chambered are generally not accurate enough for such use; most of these firearms are constructed for self-defense, where a high degree of accuracy is not necessary. However, some of the better models with adjustable sights are suitable for informal target shooting and hunting small game at limited distances.

All powders listed performed adequately, with Winchester 231 giving the best overall results.

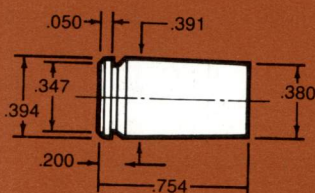
90 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.102**
.355"**#35500 HP/XTP****Ballistic Coefficient — .099****C.O.L. — .955"**

POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
700-X	2.5 gr.	2.6 gr.	2.8 gr.	2.9 gr.	3.1 gr.	3.3 gr.
Red Dot	2.6 gr.	2.8 gr.	2.9 gr.	3.1 gr.	3.3 gr.	
Bullseye	2.7 gr.	3.0 gr.	3.3 gr.	3.5 gr.	3.8 gr.	
Green Dot	2.9 gr.	3.1 gr.	3.4 gr.	3.6 gr.	3.8 gr.	
WIN 231	3.3 gr.	3.5 gr.	3.7 gr.	3.8 gr.	4.0 gr.	
Herco	3.7 gr.	4.0 gr.	4.3 gr.	4.7 gr.		
Unique	3.8 gr.	4.0 gr.	4.3 gr.	4.5 gr.	4.8 gr.	
HS-5	4.2 gr.	4.5 gr.	4.7 gr.	5.0 gr.		

*See Ballistics Tables on pages 281-283, Vol. II***100 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.113**
.355"**#3552 FMJ-RN****Ballistic Coefficient — .115****C.O.L. — .980"**

POWDER	VELOCITY					
	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
700-X	2.4 gr.	2.5 gr.	2.7 gr.	2.8 gr.	2.9 gr.	3.1 gr.
Red Dot	2.5 gr.	2.7 gr.	2.8 gr.	3.0 gr.		
Bullseye	2.6 gr.	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.6 gr.
WIN 231	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.5 gr.	3.7 gr.
Green Dot	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.6 gr.	
Unique	3.4 gr.	3.6 gr.	3.9 gr.	4.1 gr.	4.4 gr.	
Herco	3.5 gr.	3.8 gr.	4.0 gr.	4.2 gr.	4.4 gr.	4.6 gr.
HS-5	4.0 gr.	4.2 gr.	4.4 gr.	4.6 gr.	4.8 gr.	5.0 gr.

See Ballistics Tables on pages 284-286, Vol. II **Indicates maximum load • use with caution**



9mm LUGER (9 X 19, 9mm Parabellum)

PISTOL: S & W MODEL 39
BARREL: 4", 1 in 10" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 100

BULLET DIAMETER: .355"
MAXIMUM C.O.L.: 1.169"
MAX. CASE LENGTH: .754"
CASE TRIM LENGTH: .744"

The 9mm Luger is the most widely chambered military pistol cartridge in the world. It has become extremely popular in the U.S. and is used by a large number of law enforcement agencies. Introduced in 1902 by Georg Luger in his Luger Pistol and dubbed the 9mm Parabellum, this cartridge was adopted by the German Armed Forces just six years later. The cartridge is also used extensively in submachine guns.

The 9mm Luger is economical and relatively easy to reload. With the ending of World War II, a great number of military surplus semi-autos were sold in the U.S., which also enhanced popularity of the round in this country. Today, every major U.S. manufacturer offers a firearm in this caliber. Many foreign producers offer fine firearms in the 9mm Luger. The U.S. armed services have adopted a Beretta pistol, the M9, as the official sidearm. The large number of firearms in 9mm prompted the need for commercial ammunition and reloading supplies. Hornady offers reloading dies and eight different bullets for the 9mm.

Powders that worked exceptionally well in our test weapon were Hercules Unique, Winchester 231, and AA#2. AA#2 produced the highest velocity of all the powders tested with the 90, 100, 115 and 124 grain bullets while AA#7 and Blue Dot gave the highest velocity with the 147 grain bullet. Velocity difference between 4" and 5" barrels were negligible. Note: When reloading for the 9mm, care must be taken that little or no crimp be used, since the 9mm headspaces on the mouth of the case.

We say relatively easy to reload because there is a large variation in 9mm Luger cases. Some differ in neck thickness while others differ in internal taper and case capacity. It is best to segregate cases by manufacturer and construction and load accordingly.

90 GRAIN BULLETS:

SECTIONAL DENSITY: .102
DIAMETER: .355"

#35500 HP/XTP
Ballistic Coefficient — .099
C.O.L. — 1.080"



POWDER	VELOCITY				
	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
Red Dot	4.0 gr.	4.3 gr.	4.5 gr.		
IMR 7625	4.3 gr.	4.5 gr.			
700X	4.2 gr.	4.4 gr.	4.6 gr.		
WIN WSL	4.2 gr.	4.4 gr.	4.6 gr.	4.8 gr.	
Bullseye	4.4 gr.	4.7 gr.	5.0 gr.		
Pearl Scot	4.3 gr.	4.6 gr.	4.9 gr.	5.2 gr.	
Unique	4.9 gr.	5.1 gr.	5.3 gr.		
WIN 231	4.9 gr.	5.1 gr.	5.4 gr.	5.7 gr.	
AA #2	4.7 gr.	5.0 gr.	5.4 gr.		
WIN WST	5.5 gr.	6.0 gr.			
AA #5	6.2 gr.	6.5 gr.	6.8 gr.	7.2 gr.	
HS-6	6.9 gr.	7.2 gr.	7.4 gr.	7.7 gr.	
AA #7	7.8 gr.	8.3 gr.	8.8 gr.	9.3 gr.	

See Ballistics Tables on pages 281-283, Vol. II

 Indicates maximum load • use with caution

100 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.113
.355"

#3552 FMJ-RN
Ballistic Coefficient — .115
C.O.L. — 1.105"



POWDER	VELOCITY				
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
Red Dot	3.8 gr.	4.0 gr.	4.2 gr.	4.4 gr.	
WIN WSL	3.9 gr.	4.1 gr.	4.3 gr.	4.5 gr.	
Pearl Scot	4.2 gr.	4.3 gr.	4.5 gr.	4.8 gr.	
Bullseye		4.3 gr.	4.6 gr.	4.9 gr.	5.2 gr.
AA #2		4.0 gr.	4.6 gr.	5.2 gr.	
Unique	4.6 gr.	4.9 gr.	5.1 gr.	5.3 gr.	
WIN 231	4.3 gr.	4.6 gr.	5.0 gr.	5.3 gr.	
WIN WST	5.2 gr.	5.5 gr.	5.9 gr.	6.2 gr.	
AA #5	5.8 gr.	6.1 gr.	6.4 gr.	6.6 gr.	6.9 gr.
HS-6		6.6 gr.	6.9 gr.	7.2 gr.	7.5 gr.
AA #7	7.3 gr.	7.7 gr.	8.1 gr.	8.4 gr.	8.8 gr.

See Ballistics Tables on pages 284-286, Vol. II

9mm LUGER (9 X 19, 9mm Parabellum)



Indicates maximum load • use with caution

115 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .355"

#35540 HP/XTP
Ballistic Coefficient — .129
C.O.L. — 1.050"



#3555 FMJ-RN
Ballistic Coefficient — .140
C.O.L. — 1.105"



POWDER	VELOCITY				
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
Red Dot	3.7 gr.	4.1 gr.			
WIN WSL	4.0 gr.	4.2 gr.	4.4 gr.		
Bullseye		4.5 gr.	4.8 gr.	5.1 gr.	
WIN 231	4.5 gr.	4.7 gr.	5.1 gr.	5.5 gr.	
Pearl Scot	4.6 gr.	4.8 gr.	5.0 gr.		
Unique	4.7 gr.	4.9 gr.	5.1 gr.		
AA #2	4.7 gr.	5.0 gr.			
WIN WST	5.2 gr.	5.4 gr.	5.6 gr.		
AA #5	5.6 gr.	5.9 gr.	6.2 gr.	6.6 gr.	
HS-6	6.3 gr.	6.5 gr.	6.9 gr.		
AA #7	7.4 gr.	7.9 gr.	8.4 gr.		

See Ballistics Tables on pages 286-287, 287-288, Vol. II



Indicates maximum load • use with caution

124 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.141
.355"

#3556 FMJ-FP

Ballistic Coefficient — .174
C.O.L. — 1.050"



#3557 FMJ-RN

Ballistic Coefficient — .145
C.O.L. — 1.150"



#3567 LRN

Ballistic Coefficient — .131
C.O.L. — 1.090"



POWDER	VELOCITY							
	1025 fps	1050 fps	1075 fps	1100 fps	1125 fps	1150 fps	1175 fps	1200 fps
Red Dot	3.8 gr.	4.0 gr.	4.2 gr.					
WIN WSL	3.9 gr.	4.0 gr.	4.2 gr.	4.3 gr.	4.4 gr.			
Bullseye	4.1 gr.	4.2 gr.	4.4 gr.					
Pearl Scot		4.4 gr.	4.6 gr.	4.7 gr.	4.9 gr.	5.0 gr.		
Unique	4.7 gr.	4.8 gr.	4.9 gr.	5.0 gr.	5.1 gr.			
WIN 231		4.7 gr.	4.9 gr.	5.1 gr.	5.3 gr.			
AA #2	4.7 gr.	4.8 gr.	5.0 gr.					
WIN WST	4.8 gr.	5.0 gr.	5.2 gr.	5.4 gr.				
AA #5	5.3 gr.	5.5 gr.	5.7 gr.	5.9 gr.	6.1 gr.	6.2 gr.		
HS-6	6.2 gr.	6.3 gr.	6.5 gr.	6.6 gr.	6.8 gr.	6.9 gr.		
AA #7	7.2 gr.	7.5 gr.	7.7 gr.	8.0 gr.				

See Ballistics Tables on pages 289-290, 290-291, 294-295, Vol. II

 Indicates maximum load • use with caution

147 GRAIN BULLETS:

SECTIONAL DENSITY: .167
DIAMETER: .355"

#35580 HP/XTP
Ballistic Coefficient — .212
C.O.L. — 1.100"



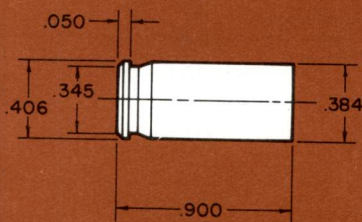
#3559 FMJ-RN
Ballistic Coefficient — .212
C.O.L. — 1.169"



POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	975 fps	1000 fps
SR 4756	3.2 gr.	3.4 gr.	3.6 gr.	3.8 gr.		
WIN WSF	3.3 gr.	3.6 gr.	3.9 gr.	4.2 gr.		
AA #5	3.8 gr.	4.1 gr.	4.3 gr.	4.6 gr.		
Solo 1500	3.8 gr.	4.1 gr.	4.3 gr.	4.6 gr.		
HS-6		4.4 gr.	4.7 gr.	4.9 gr.	5.1 gr.	
Blue Dot	4.2 gr.	4.5 gr.	4.8 gr.	5.2 gr.	5.3 gr.	5.5 gr.
HS-7	4.4 gr.	4.8 gr.	5.2 gr.	5.6 gr.		
AA #7	5.1 gr.	5.5 gr.	5.9 gr.	6.2 gr.	6.4 gr.	6.6 gr.

See Ballistics Tables on pages 291-293, 293-294, Vol. II

 Indicates maximum load • use with caution



38 ACP

PISTOL: COLT MODEL 1902
BARREL: 6", 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WSP

BULLET DIA.: .355"-.357"
MAXIMUM C.O.L.: 1.115"
MAX. CASE LENGTH: .900"
CASE TRIM LENGTH: .890"

The 38 Automatic Colt Pistol is yet another example of the fruitful collaboration between Colt and John Browning. Developed as a potential military service pistol, the 38 ACP first appeared in 1900 in a model which could fire eight rounds on full automatic. Though faster and more powerful than the 38 Long Colt which served as the Army's official sidearm from 1892 to 1911, the 38 ACP eventually lost out in the design competition when the military opted for 45 caliber as the minimum for its service handguns.

The 38 ACP became obsolete in 1929 when Colt introduced the more powerful 38 Super Automatic, an improved version of the 38 ACP loaded to much higher pressures. The cartridges are identical in appearance, but the Super version is dangerous if fired in handguns designed for the original cartridge.

Factory ammunition for the 38 ACP is loaded with 130 grain bullets to a muzzle velocity of 1040 fps. With the lightweight Hornady 110 grain Hollow Point it is possible to speed things up to a full 1250 fps. In terms of power the 38 ACP is about the equivalent of the 9mm Luger cartridge.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .123
DIAMETER: .357"

#35700 HP/XTP
Ballistic Coefficient — .131
C.O.L. — 1.100"



POWDER	VELOCITY			
	1100 fps	1150 fps	1200 fps	1250 fps
700X		4.4 gr.	4.7 gr.	5.0 gr.
Bullseye	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.
Unique	5.4 gr.	5.8 gr.	6.1 gr.	6.4 gr.

See Ballistics Tables on pages 295-298, Vol. II

115 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .355"

#35540 HP/XTP
Ballistic Coefficient — .129
C.O.L. — 1.115"



#3555 FMJ-RN
Ballistic Coefficient — .140
C.O.L. — 1.115"



POWDER	VELOCITY			
	1000 fps	1050 fps	1100 fps	1150 fps
Red Dot	4.0 gr.	4.3 gr.	4.6 gr.	4.9 gr.
Bullseye	4.2 gr.	4.4 gr.	4.7 gr.	5.0 gr.
Unique	5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.

See Ballistics Tables on pages 286-287, Vol. II



Indicates maximum load • use with caution

125 GRAIN BULLETS:

SECTIONAL DENSITY:	.140
DIAMETER:	.357"

#35710 HP/XTP

Ballistic Coefficient — .151
C.O.L. — 1.060"



#35730 FP/XTP

Ballistic Coefficient — .148
C.O.L. — 1.060"

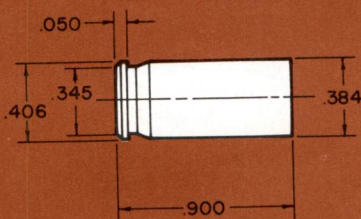


POWDER	VELOCITY		
	1000 fps	1050 fps	1100 fps
Bullseye	4.1 gr.	4.4 gr.	4.7 gr.
Red Dot	4.2 gr.	4.5 gr.	4.7 gr.
Unique	5.2 gr.	5.4 gr.	5.7 gr.
Herco	5.6 gr.	5.9 gr.	6.2 gr.

See Ballistics Tables on pages 299-302, 302-306, Vol. II



Indicates maximum load • use with caution



38 SUPER AUTOMATIC

PISTOL: COLT 38 SUPER
BARREL: 5", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: WINCHESTER WSP

BULLET DIA.: .355-.357"
MAXIMUM C.O.L.: 1.280"
MAX. CASE LENGTH: .900"
CASE TRIM LENGTH: .890"

The speed and power of the 38 Super have won it a substantial following since its introduction in 1929 as an improved version of Colt's older 38 ACP cartridge. It was designed for a modified Government Model automatic pistol, a much stronger firearm than the auto chambered for the 38 ACP. Under no circumstances should 38 Super factory ammo or top equivalent reloads be fired in weapons chambered for the older 38 ACP.

Of American handgun manufacturers, only Colt has produced pistols for the 38 Super, though there are a number of European automatics made for this cartridge. The 38 Super was also at one time chambered in the Thompson submachinegun.

Factory ammo, loaded as it is with 130 grain metal jacketed bullets, does not permit the 38 Super Auto to live up to its full sporting potential. The Hornady Bullets we recommend for reloading the cartridge are mostly hollow points with excellent expansion characteristics. Fired at 38 Super velocities they pack a very effective wallop for hunting small game.

Accuracy is often dependent on the manner of headspace regulation. Newer guns and most custom guns headspace on the case mouth and are quite accurate. Other pistols headspace on the small rim, and due to a variety of problems, accuracy ranges from fair to acceptable.

90 GRAIN BULLETS:

SECTIONAL DENSITY: .102
DIAMETER: .355"

#35500 HP/XTP

Ballistic Coefficient — .099
C.O.L. — 1.220"



POWDER	VELOCITY				
	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps
Unique	6.1 gr.	6.4 gr.			
Bullseye	5.6 gr.	5.9 gr.	6.2 gr.	6.6 gr.	
WIN 231	6.6 gr.	6.8 gr.	7.0 gr.	7.2 gr.	
AA #5	7.2 gr.	7.4 gr.	7.6 gr.	7.9 gr.	8.1 gr.
AA #7	9.8 gr.	10.3 gr.	10.7 gr.	11.1 gr.	

See Ballistics Tables on pages 281-283, Vol. II

110 GRAIN BULLETS:

SECTIONAL DENSITY: .123
DIAMETER: .357"

#35700 HP/XTP

Ballistic Coefficient — .131
C.O.L. — 1.210"



POWDER	VELOCITY					
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
Bullseye	5.0 gr.	5.2 gr.	5.5 gr.	5.7 gr.		
Unique	5.4 gr.	5.7 gr.	6.0 gr.			
WIN 231	5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.		
AA #5		6.3 gr.	6.6 gr.	6.8 gr.	7.0 gr.	7.3 gr.
HS-6	7.3 gr.	7.6 gr.	7.8 gr.	8.1 gr.	8.4 gr.	

See Ballistics Tables on pages 295-298, Vol. II

 Indicates maximum load • use with caution

115 GRAIN BULLETS:

SECTIONAL DENSITY: .129
DIAMETER: .355"

#35540 HP/XTP
Ballistic Coefficient — .130
C.O.L. — 1.245"



#3555 FMJ-RN
Ballistic Coefficient — .140
C.O.L. — 1.245"



POWDER	VELOCITY					
	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
Bullseye		4.8 gr.	5.1 gr.	5.3 gr.	5.6 gr.	
WIN 231		5.3 gr.	5.6 gr.	5.9 gr.	6.1 gr.	
WIN WSF	5.2 gr.	5.5 gr.	5.7 gr.	6.0 gr.	6.3 gr.	
Herco	5.6 gr.	5.9 gr.	6.2 gr.	6.5 gr.	6.7 gr.	
Solo 1500	5.8 gr.	6.2 gr.	6.5 gr.	6.9 gr.		
AA#5	6.3 gr.	6.6 gr.	6.9 gr.	7.3 gr.	7.9 gr.	
HS-6	6.5 gr.	6.7 gr.	7.0 gr.	7.3 gr.	7.6 gr.	7.9 gr.
AA#7	8.0 gr.	8.3 gr.	8.6 gr.	8.9 gr.	9.2 gr.	9.6 gr.

See Ballistics Tables on pages 286-287, 287-288, Vol. II



Indicates maximum load • use with caution

124-125 GRAIN BULLETS:

SECTIONAL DENSITY:	.141 - .140
DIAMETER:	.355" - .357"

#3556 FMJ-FP

Ballistic Coefficient — .174
C.O.L. — 1.210"



#3557 FMJ-RN

Ballistic Coefficient — .145
C.O.L. — 1.260"



#35710 HP/XTP

Ballistic Coefficient — .151
C.O.L. — 1.180"



#35730 FP/XTP

Ballistic Coefficient — .148
C.O.L. — 1.180"



POWDER	VELOCITY					
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
Unique	4.9 gr.	5.1 gr.	5.3 gr.	5.5 gr.		
WIN 231	4.9 gr.	5.1 gr.	5.4 gr.	5.7 gr.		
Herco	5.0 gr.	5.3 gr.	5.6 gr.			
AA #5	5.5 gr.	5.7 gr.	5.9 gr.	6.2 gr.	6.4 gr.	
HS-6			7.0 gr.	7.3 gr.	7.6 gr.	8.0 gr.

See Ballistics Tables on pages 289-290, 290-291, 299-302, 302-306, Vol. II



Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.157
.357"

#35740 HP/XTP
Ballistic Coefficient — .169
C.O.L. — 1.210"



POWDER	VELOCITY						
	950 fps	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
Bullseye	3.9 gr.	4.2 gr.	4.5 gr.	4.8 gr.			
Unique	4.5 gr.	4.7 gr.	4.9 gr.				
WIN 231		4.6 gr.	5.0 gr.	5.3 gr.			
Herco	4.4 gr.	4.8 gr.	5.3 gr.				
AA #5		5.2 gr.	5.4 gr.	5.7 gr.	5.9 gr.		
WIN 473		5.4 gr.	5.7 gr.	6.1 gr.			
HS-6		6.2 gr.	6.5 gr.	6.8 gr.	7.1 gr.		
AA #7		7.3 gr.	7.6 gr.	7.9 gr.	8.3 gr.		
AA #9		9.0 gr.	9.5 gr.	9.9 gr.	10.3 gr.	10.8 gr.	11.2 gr.

See Ballistics Tables on pages 306-309, Vol. II

 Indicates maximum load • use with caution

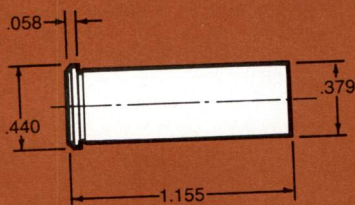
147 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.141**
.355"**#35580 HP/XTP****Ballistic Coefficient — .212**
C.O.L. — 1.260"**#3559 FMJ-RN****Ballistic Coefficient — .212**
C.O.L. — 1.260"

POWDER	VELOCITY					
	950 fps	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps
WIN WSF	4.4 gr.	4.8 gr.	5.2 gr.			
Solo 1500	5.3 gr.	5.6 gr.	5.8 gr.	6.1 gr.		
HS-6	5.6 gr.	5.9 gr.	6.2 gr.	6.5 gr.		
Blue Dot		5.7 gr.	6.1 gr.	6.5 gr.	7.0 gr.	
AA#7	6.7 gr.	7.1 gr.	7.5 gr.	7.8 gr.	8.2 gr.	
2400		8.3 gr.	8.6 gr.	9.0 gr.	9.3 gr.	9.7 gr.
AA#9		8.7 gr.	9.1 gr.	9.6 gr.	10.0 gr.	

*See Ballistics Tables on pages 291-293, 293-294, Vol. II***160 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.179**
.357"**#3572 JTC-SIL****Ballistic Coefficient — .181**
C.O.L. — 1.200"

POWDER	VELOCITY						
	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps	1150 fps
Herco	4.2 gr.	4.4 gr.	4.6 gr.	4.8 gr.			
AA #5	4.4 gr.	4.6 gr.	4.8 gr.	5.1 gr.			
HS-6	5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.		
WIN 473		5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.		
AA #7			6.7 gr.	7.1 gr.	7.5 gr.	7.9 gr.	
AA #9				8.8 gr.	9.2 gr.	9.7 gr.	10.1 gr.

See Ballistics Tables on pages 316-319, Vol. II **Indicates maximum load • use with caution**



38 SPECIAL

PISTOL: S & W MODEL 15
BARREL: 4", 1 in 18³/₄" TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 100

BULLET DIA.: .357"-.358"
MAXIMUM C.O.L.: 1.475"
MAX. CASE LENGTH: 1.155"
CASE TRIM LENGTH: 1.145"

In 1902 the 38 Special was introduced by Smith and Wesson in their Military and Police Model revolver. Since that time, the 38 Special has become one of the world's most reloaded centerfire cartridge. It is a very popular sidearm, used by law enforcement agencies in the U.S., and because of its popularity, the 38 is chambered in nearly all revolvers and even the Thompson/Center Contender.

Moreover, the versatility of the 38 Special is to the handgunner, what the 308 Winchester is to the rifleman. The 38 Special can be used for everything from self-defense to plinking to small game hunting to target shooting, with excellent results.

To complement the 38 Special, Hornady offers 10 choices of bullets (four lead bullets and six jacketed bullets) that fulfill the 38 Special's potential.

The 148 HBWC is the most accurate target bullet. Wadcutters are not suitable for high velocity loads. For best results in target shooting, loads at 800 fps give optimum performance. Maximum loads listed with an asterisk yield +P pressures. *+P pressures are above the SAAMI standard for the .38 Special and should only be used in modern guns designed by the manufacturer for +P pressures.* Some powders do not show +P loads because the next increment would yield higher than +P pressures. Our test weapon produced its best groups using Bullseye and Unique, with the highest velocities obtained from HS-6.

110 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.123**
.357"**#35700 HP/XTP**
Ballistic Coefficient — .131
C.O.L. — 1.455"

POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
Red Dot	3.2 gr.	3.5 gr.	3.8 gr.	4.1 gr.	4.4 gr.	*4.7 gr.
700-X			4.0 gr.	4.3 gr.	*4.5 gr.	4.8 gr.
Bullseye		4.1 gr.	4.3 gr.	4.6 gr.	*4.9 gr.	
Unique		4.6 gr.	4.8 gr.	5.1 gr.	*5.3 gr.	
WIN 231		4.4 gr.	4.7 gr.	5.1 gr.	*5.4 gr.	
Herco		4.6 gr.	4.9 gr.	*5.2 gr.	*5.5 gr.	
AA #2		4.5 gr.	4.9 gr.	*5.3 gr.		
AA #5	5.8 gr.	6.1 gr.	6.5 gr.	*6.8 gr.	*7.1 gr.	*7.5 gr.
HS-6			6.3 gr.	6.8 gr.	*7.3 gr.	

* = +P Loads

See Ballistics Tables on pages 295-298, Vol. II

 Indicates maximum load • use with caution

125 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.140**
.357"**#35710 HP/XTP****Ballistic Coefficient — .151****C.O.L. — 1.455"****#35730 FP/XTP****Ballistic Coefficient — .148****C.O.L. — 1.455"**

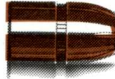
POWDER	VELOCITY				
	800 fps	850 fps	900 fps	950 fps	1000 fps
Red Dot	3.7 gr.	3.9 gr.	4.2 gr.	*4.5 gr.	
700-X	3.6 gr.	3.9 gr.	*4.3 gr.		
Bullseye	4.0 gr.	*4.3 gr.	*4.5 gr.		
AA #2	4.2 gr.	4.5 gr.	4.8 gr.	*5.1 gr.	
WIN 231	4.3 gr.	4.6 gr.	*5.0 gr.		
Unique	4.5 gr.	4.7 gr.	*5.0 gr.		
Herco	4.4 gr.	4.7 gr.	*5.0 gr.		
S1500	5.3 gr.	5.6 gr.	6.0 gr.	*6.4 gr.	*6.8 gr.
AA #5	5.9 gr.	6.2 gr.	*6.5 gr.	*6.8 gr.	
HS-6	5.8 gr.	6.3 gr.	*6.7 gr.	*7.2 gr.	

*** = +P Loads***See Ballistics Tables on pages 299-302, 302-306, Vol. II* **Indicates maximum load • use with caution**

140 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .357"

#35740 HP/XTP
Ballistic Coefficient — .169
C.O.L. — 1.455"



POWDER	VELOCITY					
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
700-X		3.2 gr.	3.6 gr.	*3.9 gr.	*4.3 gr.	
Red Dot		3.6 gr.	*3.9 gr.	*4.1 gr.	*4.3 gr.	
Bullseye		3.6 gr.	3.9 gr.	*4.2 gr.		
AA #2	3.8 gr.	4.0 gr.	4.3 gr.	*4.5 gr.	*4.8 gr.	
Unique	4.1 gr.	4.3 gr.	*4.5 gr.	*4.7 gr.		
WIN 231	3.9 gr.	4.2 gr.	4.4 gr.	*4.7 gr.	*4.9 gr.	
Herco	3.9 gr.	4.2 gr.	4.5 gr.	*4.8 gr.		
S1500			5.4 gr.	5.7 gr.	6.0 gr.	*6.3 gr.
AA #5		5.2 gr.	5.5 gr.	5.9 gr.	*6.2 gr.	*6.5 gr.
HS-6		5.5 gr.	5.8 gr.	6.2 gr.	*6.6 gr.	*6.9 gr.
AA #7	6.3 gr.	6.6 gr.	7.0 gr.	7.3 gr.	*7.7 gr.	*8.1 gr.

* = +P Loads

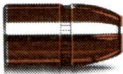
See Ballistics Tables on pages 306-309, Vol. II

 Indicates maximum load • use with caution

158 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 1.455"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.455"



POWDER	VELOCITY			
	700 fps	750 fps	800 fps	850 fps
700-X	3.3 gr.	3.5 gr.	*3.8 gr.	*4.0 gr.
Red Dot	3.3 gr.	3.6 gr.	*3.9 gr.	*4.2 gr.
Bullseye	3.5 gr.	3.8 gr.	*4.1 gr.	
AA #2	4.0 gr.	*4.2 gr.	*4.4 gr.	
WIN 231	3.8 gr.	4.1 gr.	*4.4 gr.	*4.7 gr.
Unique	3.9 gr.	4.2 gr.	*4.5 gr.	*4.7 gr.
Herco	4.1 gr.	*4.3 gr.	*4.6 gr.	
AA #5	5.2 gr.	5.5 gr.	*5.7 gr.	*6.0 gr.
HS-6	5.4 gr.	5.7 gr.	*6.0 gr.	*6.4 gr.
AA #7	6.2 gr.	6.6 gr.	*7.0 gr.	*7.3 gr.

* = +P Loads

See Ballistics Tables on pages 309-313, 313-316, Vol. II



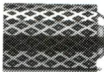
Indicates maximum load • use with caution

148 GRAIN BULLETS:

SECTIONAL DENSITY:	.165
DIAMETER:	.358"

#3580 BBWC

Ballistic Coefficient — .055
C.O.L. — 1.165"



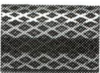
#3582 HBWC

Ballistic Coefficient — .047
C.O.L. — 1.165"



#1030 DEWC

Ballistic Coefficient — .048
C.O.L. — 1.165"



POWDER	VELOCITY			
	800 fps	850 fps	900 fps	950 fps
700X	2.7 gr.	3.0 gr.	3.3 gr.	
Red Dot	2.8 gr.	3.1 gr.	3.3 gr.	
Bullseye	3.0 gr.	3.3 gr.	3.5 gr.	3.7 gr.
WIN 231	3.2 gr.	3.5 gr.	3.7 gr.	
Unique	3.3 gr.	3.6 gr.	3.8 gr.	
AA #2	3.3 gr.	3.6 gr.	4.0 gr.	
AA #5	4.5 gr.	4.7 gr.	4.9 gr.	

See Ballistics Tables on pages 322-323, 323-324, 324, Vol. II

 Indicates maximum load • use with caution

158 GRAIN BULLETS:

SECTIONAL DENSITY:

.176

DIAMETER:

.358"

#3586 LRN

Ballistic Coefficient — .159

C.O.L. — 1.475"



#3588 SWC

Ballistic Coefficient — .135

C.O.L. — 1.475"



#3589 SWC/HP

Ballistic Coefficient — .139

C.O.L. — 1.475"

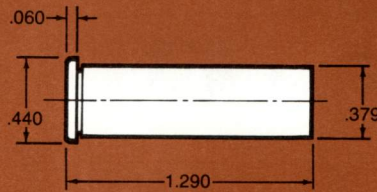


POWDER	VELOCITY			
	750 fps	800 fps	850 fps	900 fps
700-X	3.1 gr.	3.3 gr.		
Red Dot	3.0 gr.	3.3 gr.	3.6 gr.	
Bullseye	3.3 gr.	3.6 gr.		
AA #2	3.7 gr.	3.9 gr.		
WIN 231	3.6 gr.	3.9 gr.	4.2 gr.	
Herco	3.8 gr.	4.0 gr.	4.3 gr.	
Unique	3.9 gr.	4.1 gr.	4.2 gr.	4.4 gr.
AA #5	5.0 gr.	5.2 gr.	5.5 gr.	
HS-6	5.1 gr.	5.3 gr.	5.6 gr.	5.8 gr.

See Ballistics Tables on pages 325, 326, 327, Vol. II



Indicates maximum load • use with caution



357 MAGNUM

PISTOL: S&W MODEL 27
BARREL: 8 $\frac{3}{8}$ " , 1 in 18 $\frac{3}{4}$ " TWIST
CASE: HORNADY/FRONTIER
PRIMER: FEDERAL 200

BULLET DIA.: .357-.358"
MAXIMUM C.O.L.: 1.590"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

The 357 Magnum was first introduced in 1935 by Smith and Wesson with the intention of improving on the 38 Special round for hunting and law enforcement. The 357 case is approximately .12" longer than the 38 Special and operates at considerably higher pressure, delivering as much as three times the energy of the 38 Special. This versatile magnum round makes a superb law enforcement cartridge and is sufficient for hunting small game to deer at moderate ranges.

Lead bullets make good small game and target rounds; however, velocities should not exceed 1100 fps, as undesirable leading of the barrel can occur in just a few rounds. Also, no loads are listed for the 148 grain wadcutter bullets since they are primarily target bullets and should not be fired at velocities exceeding 900 fps. When reloading 148 grain wadcutters, use 38 Special data.

Many powders produced excellent results with the Hornady jacketed bullets. These powders include Blue Dot, AA #9, H110, HS-7, and 296. Unique provided the best performance with the lead bullets.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .123
DIAMETER: .357"

#35700 HP/XTP
Ballistic coefficient — .131
C.O.L. — 1.590"



POWDER	VELOCITY					
	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps	1800 fps
Solo 1500	9.3 gr.	10.1 gr.	10.8 gr.	11.6 gr.		
HS-6	10.9 gr.	11.3 gr.	11.7 gr.	12.2 gr.		
HS-7	12.1 gr.	12.4 gr.	12.7 gr.	13.0 gr.		
Blue Dot	11.5 gr.	12.4 gr.	13.3 gr.	14.3 gr.	15.2 gr.	
AA #7	12.2 gr.	12.9 gr.	13.6 gr.	14.4 gr.		
WIN 296		21.4 gr.	21.9 gr.	22.4 gr.	22.9 gr.	23.4 gr.

See Ballistics Tables on pages 295-298, Vol. II

 Indicates maximum load • use with caution

125 GRAIN BULLETS:

SECTIONAL DENSITY: .140
DIAMETER: .357"

#35710 HP/XTP

Ballistic Coefficient — .151
C.O.L. — 1.590"

**#35730 FP/XTP**

Ballistic Coefficient — .148
C.O.L. — 1.590"



POWDER	VELOCITY						
	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
Solo 1500	9.7 gr.	10.2 gr.	10.7 gr.	11.3 gr.			
HS-6	10.5 gr.	10.9 gr.	11.2 gr.	11.6 gr.			
HS-7	11.5 gr.	11.9 gr.	12.3 gr.				
AA #7	11.6 gr.	12.3 gr.	13.0 gr.				
Blue Dot	13.7 gr.	14.0 gr.	14.3 gr.	14.6 gr.			
2400	14.4 gr.	15.0 gr.	15.6 gr.	16.3 gr.			
AA #9			15.8 gr.	16.5 gr.	17.2 gr.	17.9 gr.	18.6 gr.
IMR 4227	18.6 gr.	19.1 gr.	19.7 gr.	20.3 gr.			
WIN 296	18.8 gr.	19.3 gr.	19.8 gr.	20.4 gr.	20.9 gr.		
H110	19.3 gr.	19.7 gr.	20.0 gr.	20.3 gr.	20.6 gr.		

See Ballistics Tables on pages 299-302, 302-306, Vol. II

 Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .357"

#35740 HP/XTP
Ballistic Coefficient — .169
C.O.L. — 1.590"



POWDER	VELOCITY							
	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps
Solo 1500	7.7 gr.	8.3 gr.	8.8 gr.	9.4 gr.	9.9 gr.			
HS-6	9.6 gr.	9.8 gr.	10.1 gr.	10.3 gr.	10.5 gr.	10.8 gr.		
HS-7	10.0 gr.	10.4 gr.	10.8 gr.	11.2 gr.	11.6 gr.	12.0 gr.		
AA #7		10.5 gr.	11.0 gr.	11.5 gr.	12.0 gr.	12.5 gr.		
Blue Dot	10.7 gr.	11.1 gr.	11.5 gr.	11.9 gr.	12.3 gr.	12.7 gr.	13.1 gr.	
2400	10.1 gr.	11.1 gr.	12.1 gr.	13.1 gr.	14.0 gr.			
AA #9		11.8 gr.	12.6 gr.	13.4 gr.	14.1 gr.	14.9 gr.	15.7 gr.	16.5 gr.
H110				16.6 gr.	17.0 gr.	17.4 gr.	17.7 gr.	18.1 gr.
WIN 296				16.8 gr.	17.4 gr.	17.9 gr.	18.4 gr.	
IMR 4227	14.4 gr.	15.4 gr.	16.3 gr.	17.2 gr.	18.1 gr.	19.0 gr.		

See Ballistics Tables on pages 306-309, Vol. II



Indicates maximum load • use with caution

158 GRAIN BULLETS:

SECTIONAL DENSITY:	.177
DIAMETER:	.357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 1.590"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.590"



POWDER	VELOCITY					
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
Solo 1500	8.5 gr.	8.9 gr.	9.3 gr.			
HS-6	9.1 gr.	9.4 gr.	9.6 gr.	9.9 gr.		
HS-7	9.9 gr.	10.3 gr.	10.7 gr.			
Blue Dot	10.5 gr.	10.7 gr.	10.8 gr.	11.0 gr.	11.2 gr.	11.4 gr.
AA #7	9.8 gr.	10.4 gr.	11.0 gr.			
2400	11.5 gr.	12.0 gr.	12.5 gr.	13.0 gr.	13.5 gr.	
AA #9	12.0 gr.	12.4 gr.	12.9 gr.	13.4 gr.	13.8 gr.	14.3 gr.
H110	14.1 gr.	14.7 gr.	15.2 gr.	15.8 gr.		
WIN 296	14.3 gr.	15.0 gr.	15.7 gr.	16.4 gr.		
IMR 4227	14.9 gr.	15.4 gr.	15.9 gr.	16.5 gr.	17.0 gr.	

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .357"

#3572 JTC-SIL
Ballistic Coefficient — .181
C.O.L. — 1.590"



POWDER	VELOCITY					
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
Solo 1500	8.5 gr.	8.9 gr.	9.3 gr.			
HS-6	9.1 gr.	9.4 gr.	9.6 gr.	9.9 gr.		
HS-7	9.9 gr.	10.3 gr.	10.7 gr.			
Blue Dot	10.5 gr.	10.7 gr.	10.8 gr.	11.0 gr.	11.2 gr.	11.4 gr.
AA #7	9.8 gr.	10.4 gr.	11.0 gr.			
2400	11.5 gr.	12.0 gr.	12.5 gr.	13.0 gr.	13.5 gr.	
AA #9	12.0 gr.	12.4 gr.	12.9 gr.	13.4 gr.	13.8 gr.	14.3 gr.
H110	14.1 gr.	14.7 gr.	15.2 gr.	15.8 gr.		
WIN 296	14.3 gr.	15.0 gr.	15.7 gr.	16.4 gr.		
IMR 4227	14.9 gr.	15.4 gr.	15.9 gr.	16.5 gr.	17.0 gr.	

See Ballistics Tables on pages 316-319, 416-417, Vol. II



Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .202
DIAMETER: .357"

#3577 JTC-SIL
Ballistic Coefficient — .232
C.O.L. — 1.590"



POWDER	VELOCITY						
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
800X	7.0 gr.	7.5 gr.	7.9 gr.	8.3 gr.	8.7 gr.		
Solo 1500	7.6 gr.	7.9 gr.	8.1 gr.	8.4 gr.			
AA #7		9.0 gr.	9.4 gr.	9.8 gr.	10.2 gr.		
Blue Dot	8.9 gr.	9.1 gr.	9.4 gr.	9.6 gr.			
HS-7	8.9 gr.	9.2 gr.	9.5 gr.	9.8 gr.			
2400	10.0 gr.	10.5 gr.	11.0 gr.	11.5 gr.	12.0 gr.	12.5 gr.	
AA #9	10.6 gr.	11.0 gr.	11.4 gr.	11.9 gr.	12.3 gr.	12.8 gr.	13.2 gr.
H110	12.1 gr.	12.5 gr.	12.9 gr.				
WIN 296	12.8 gr.	13.1 gr.					
IMR 4227	12.4 gr.	13.1 gr.	13.8 gr.	14.5 gr.	15.1 gr.		

See Ballistics Tables on pages 319-322, 417-418, Vol. II

158 GRAIN BULLETS:

SECTIONAL DENSITY: .176
DIAMETER: .358"

#3586 LRN
Ballistic Coefficient — .159
C.O.L. — 1.590"



#3588 SWC
Ballistic Coefficient — .135
C.O.L. — 1.590"



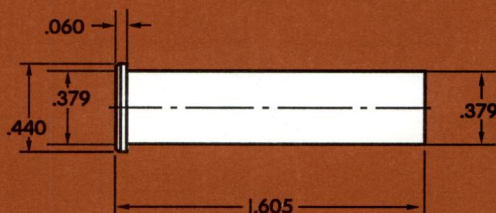
#3589 SWC/HP
Ballistic Coefficient — .139
C.O.L. — 1.590"



POWDER	VELOCITY					
	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps
SR 7625	4.2 gr.	4.5 gr.	4.9 gr.	5.2 gr.	5.5 gr.	5.8 gr.
Green Dot	4.2 gr.	4.5 gr.	4.9 gr.	5.3 gr.	5.7 gr.	6.1 gr.
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.	5.8 gr.	6.1 gr.	6.4 gr.
Unique	4.7 gr.	5.1 gr.	5.4 gr.	5.8 gr.	6.2 gr.	6.5 gr.
SR 4756	4.9 gr.	5.2 gr.	5.6 gr.	6.0 gr.	6.4 gr.	6.7 gr.
HS-6	6.1 gr.	6.6 gr.	7.0 gr.	7.4 gr.	7.8 gr.	8.2 gr.

See Ballistics Tables on pages 325, 326, 327, Vol. II

Indicates maximum load • use with caution



357 REMINGTON MAXIMUM

PISTOL: RUGER SUPER BLACKHAWK	BULLET DIAMETER: .357"
BARREL: 10½, 1 in 14" TWIST	MAXIMUM C.O.L.: 1.990"
CASE: REMINGTON	MAX. CASE LENGTH: 1.605"
PRIMER: REMINGTON 7½	CASE TRIM LENGTH: 1.595"

Remington and Sturm-Ruger announced the .357 Maximum in 1982. This new cartridge is similar to the .357 Magnum, but 0.305 inch longer and therefore holding more powder. Ruger's new Super Blackhawk has a longer cylinder and frame to accommodate the .357 Maximum. The intent of this new cartridge was a more powerful round for hunting or silhouette shooting, yet still allowing the use of the readily available .357 bullets and reloading dies.

This intent was achieved as 158 grain bullets can be propelled up to 1650 fps in our test pistol. In our testing, we found that this cartridge performed best when loaded close to maximum loads. IMR 4227, WIN 296, and WIN 680 performed best in our tests, especially with the heavier bullets. A heavy crimp and the Remington 7½ primer are recommended for ballistic uniformity.

Ruger revolvers showed some flame cutting of the frame by the propellant gases. Ruger ceased production of this firearm but Dan Wesson and Thompson/Center produce handguns in this caliber. This data can be used in these pistols with safety and with a slight gain in velocity in the Thompson/Center Contender.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .123
DIAMETER: .357"

#35700 HP/XTP
Ballistic Coefficient — .131
C.O.L. — 1.910"



POWDER	VELOCITY						
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps	1950 fps	2000 fps
IMR 4227	24.7 gr.	25.1 gr.	25.5 gr.	25.9 gr.	26.2 gr.		
H110	25.8 gr.	26.4 gr.	27.0 gr.	27.5 gr.	28.1 gr.		
WIN 296	26.5 gr.	26.9 gr.	27.3 gr.	27.8 gr.	28.2 gr.	28.6 gr.	29.0 gr.

See Ballistics Tables on pages 295-298, Vol. II

125 GRAIN BULLETS:

SECTIONAL DENSITY: .140
DIAMETER: .357"

#35710 HP/XTP
Ballistic Coefficient — .151
C.O.L. — 1.900"



#35730 FP/XTP
Ballistic Coefficient — .148
C.O.L. — 1.900"



POWDER	VELOCITY						
	1600 fps	1650 fps	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps
2400	19.2 gr.	19.8 gr.	20.4 gr.	20.9 gr.	21.5 gr.		
IMR 4227	22.5 gr.	23.1 gr.	23.7 gr.	24.3 gr.	24.9 gr.		
WIN 296	22.9 gr.	23.5 gr.	24.0 gr.	24.6 gr.	25.1 gr.	25.7 gr.	26.2 gr.
H110	22.7 gr.	23.4 gr.	24.0 gr.	24.7 gr.	25.4 gr.	26.0 gr.	
WIN 680	26.4 gr.	26.8 gr.	27.2 gr.	27.6 gr.	28.0 gr.	28.3 gr.	28.7 gr.

See Ballistics Tables on pages 299-302, 302-306, Vol. II

 Indicates maximum load • use with caution

140 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .357"

#35740 HP/XTP
Ballistic Coefficient — .169
C.O.L. — 1.900"



POWDER	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
2400	16.9 gr.	17.6 gr.	18.2 gr.	19.0 gr.	19.6 gr.		
H110	20.1 gr.	20.7 gr.	21.3 gr.	21.9 gr.	22.5 gr.	23.1 gr.	23.7 gr.
WIN 296	20.7 gr.	21.3 gr.	21.8 gr.	22.4 gr.	23.0 gr.	23.6 gr.	24.1 gr.
IMR 4227	20.2 gr.	20.9 gr.	21.6 gr.	22.3 gr.	23.0 gr.	23.7 gr.	
WIN 680	23.8 gr.	24.3 gr.	24.8 gr.	25.4 gr.	25.9 gr.	26.4 gr.	27.0 gr.

See Ballistics Tables on pages 306-309, Vol. II

158 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 1.890"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.890"



POWDER	VELOCITY						
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps
2400	14.9 gr.	15.8 gr.	16.6 gr.	17.4 gr.	18.3 gr.	19.1 gr.	
H110	18.2 gr.	18.7 gr.	19.2 gr.	19.6 gr.	20.1 gr.	20.6 gr.	
WIN 296	18.6 gr.	19.2 gr.	19.8 gr.	20.4 gr.	21.0 gr.	21.5 gr.	
IMR 4227	18.3 gr.	18.9 gr.	19.6 gr.	20.3 gr.	21.0 gr.	21.7 gr.	
WIN 680	21.9 gr.	22.4 gr.	23.0 gr.	23.5 gr.	24.0 gr.	24.5 gr.	25.0 gr.

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .357"

#3572 JTC-SIL
Ballistic Coefficient — .181
C.O.L. — 1.890"



POWDER	VELOCITY						
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps
2400	14.9 gr.	15.8 gr.	16.6 gr.	17.4 gr.	18.3 gr.	19.1 gr.	
H110	18.2 gr.	18.7 gr.	19.2 gr.	19.6 gr.	20.1 gr.	20.6 gr.	
WIN 296	18.6 gr.	19.2 gr.	19.8 gr.	20.4 gr.	21.0 gr.	21.5 gr.	
IMR 4227	18.3 gr.	18.9 gr.	19.6 gr.	20.3 gr.	21.0 gr.	21.7 gr.	
WIN 680	21.9 gr.	22.4 gr.	23.0 gr.	23.5 gr.	24.0 gr.	24.5 gr.	25.0 gr.

See Ballistics Tables on pages 316-319, 416-417, Vol. II

180 GRAIN BULLETS:

SECTIONAL DENSITY: .202
DIAMETER: .357"

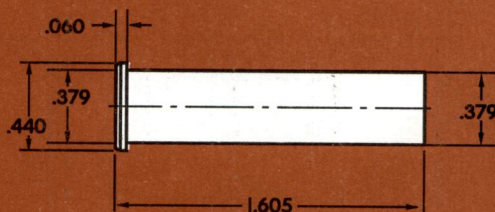
#3577 JTC-SIL
Ballistic Coefficient — .232
C.O.L. — 1.890"



POWDER	VELOCITY						
	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
2400	15.0 gr.	15.6 gr.	16.3 gr.	17.0 gr.	17.6 gr.	18.3 gr.	
WIN 296	17.1 gr.	17.4 gr.	17.8 gr.	18.2 gr.	18.5 gr.	18.9 gr.	19.3 gr.
H110	16.6 gr.	17.0 gr.	17.5 gr.	18.0 gr.	18.5 gr.	19.0 gr.	
IMR 4227	16.7 gr.	17.4 gr.	18.0 gr.	18.7 gr.	19.3 gr.	20.0 gr.	
WIN 680	19.4 gr.	19.8 gr.	20.3 gr.	20.8 gr.	21.2 gr.	21.6 gr.	22.1 gr.

See Ballistics Tables on pages 319-322, 417-418, Vol. II

 Indicates maximum load • use with caution



357 REMINGTON MAXIMUM

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: REMINGTON
PRIMER: REMINGTON 7½

BULLET DIA.: .357"-.358"
MAXIMUM C.O.L.: 2.235"
MAX. CASE LENGTH: 1.605"
CASE TRIM LENGTH: 1.595"

Shortly after Remington and Ruger introduced this new cartridge, Thompson-Center offered their excellent Contender pistol in the .357 Remington Maximum caliber. As this pistol has no cylinder gap to lose propellant gases, velocities are higher than in a revolver. Also, lacking the length limitation of the Ruger's cylinder, longer and hence heavier bullets can be used in the Contender, but not in the Ruger. Data is listed elsewhere in the handbook for the Ruger Super Blackhawk Revolver.

160 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .357"

#3572 JTC-SIL
Ballistic Coefficient — .181
C.O.L. — 1.885"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	1950 fps
2400	18.2 gr.	19.8 gr.	21.4 gr.	22.9 gr.	23.7 gr.
H110	20.3 gr.	21.8 gr.	23.3 gr.	24.7 gr.	
WIN 296	20.4 gr.	21.9 gr.	23.4 gr.	24.9 gr.	25.7 gr.
IMR 4227	20.6 gr.	22.2 gr.	23.8 gr.	25.4 gr.	

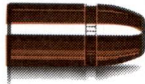
See Ballistics Tables on pages 316-319, 416-417, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .201
DIAMETER: .357" - .358"

#3577 JTC-SIL
Ballistic Coefficient — .232
C.O.L. — 1.890"



#3505 SSSP
Ballistic Coefficient — .248
C.O.L. — 2.250"



POWDER	VELOCITY						
	1400 fps	1500 fps	1600 fps	1650 fps	1700 fps	1750 fps	1800 fps
H4227	17.0 gr.	18.3 gr.	19.6 gr.	20.3 gr.	20.9 gr.	21.6 gr.	
WIN 296	17.4 gr.	18.6 gr.	19.7 gr.	20.3 gr.	20.9 gr.		
IMR 4227	17.3 gr.	19.0 gr.	20.7 gr.	21.5 gr.			
WIN 680	19.5 gr.	20.6 gr.	21.6 gr.	22.2 gr.	22.7 gr.	23.2 gr.	23.8 gr.
AA 1680	21.9 gr.	23.0 gr.	24.1 gr.	24.7 gr.	25.3 gr.		

See Ballistics Tables on pages 183-185, 319-322, 417-418, 418-419, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP
Ballistic Coefficient — .282
C.O.L. — 2.235"




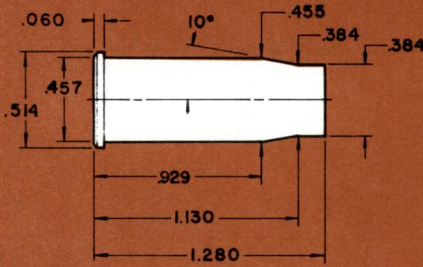
#3515 RN
Ballistic Coefficient — .195
C.O.L. 2.200"



POWDER	VELOCITY					
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps	1750 fps
WIN 680		16.0 gr.	17.7 gr.	19.3 gr.	21.0 gr.	21.8 gr.
H110	16.6 gr.	18.0 gr.	19.4 gr.			
IMR 4227	17.7 gr.	19.1 gr.	20.5 gr.			
WIN 296	17.7 gr.	19.2 gr.	20.8 gr.			
RL-7		20.2 gr.	21.6 gr.	23.1 gr.	24.5 gr.	25.2 gr.

See Ballistics Tables on pages 185-187, 187-189, 419-420, 420-421, Vol. II

 Indicates maximum load • use with caution



357/44 BAIN & DAVIS

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 14" TWIST
CASE: FEDERAL REFORMED
PRIMER: CCI 350

BULLET DIAMETER: .357"
MAXIMUM C.O.L.: 1.580"
MAX. CASE LENGTH: 1.280"
CASE TRIM LENGTH: 1.270"

The 357/44 B&D is a 44 Magnum case necked down to hold .357" bullets. Its origin dates back to about 1964. Cases are easily formed because no trimming is necessary, and a full length resizing die along with a seating die are the only necessary dies.

The 357/44 B&D is a fine game getter from varmints through deer, and is a good cartridge for Handgun Silhouette Shooting. However, more recent developments have seriously hindered the popularity of this wildcat. Today, firearms in this caliber are rarely encountered.

Our test gun gave excellent results with all powder-bullet combinations at maximum or near maximum velocities in the Thompson/Center Contender. Maximum loads should be approached with caution, as all barrels will not produce the same results.

110 GRAIN BULLETS:

SECTIONAL DENSITY: .123
DIAMETER: .357"

#35700 HP/XTP
Ballistic Coefficient — .131
C.O.L. — 1.580"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
2400	19.7 gr.	20.9 gr.	22.1 gr.	23.3 gr.	24.5 gr.	
WIN 296			23.8 gr.	25.4 gr.	27.0 gr.	28.7 gr.
IMR 4227	23.0 gr.	24.4 gr.	25.7 gr.	27.1 gr.	28.5 gr.	

See Ballistics Tables on pages 295-298, Vol. II

125 GRAIN BULLETS:

SECTIONAL DENSITY: .140
DIAMETER: .357"

#35710 HP/XTP
Ballistic Coefficient — .151
C.O.L. — 1.580"



#35730 FP/XTP
Ballistic Coefficient — .148
C.O.L. — 1.580"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
2400	17.1 gr.	18.5 gr.	19.9 gr.	21.2 gr.	22.6 gr.	
WIN 296				22.4 gr.	24.0 gr.	25.7 gr.
IMR 4227	20.9 gr.	22.2 gr.	23.6 gr.	24.9 gr.	26.3 gr.	27.6 gr.

See Ballistics Tables on pages 299-302, 302-306, Vol. II



Indicates maximum load • use with caution

158 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 1.580"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.580"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	16.9 gr.	18.2 gr.	19.5 gr.	20.8 gr.		
WIN 296	18.0 gr.	19.4 gr.	20.8 gr.	22.2 gr.	23.5 gr.	24.9 gr.
IMR 4227	20.7 gr.	21.9 gr.	23.1 gr.			

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .357"

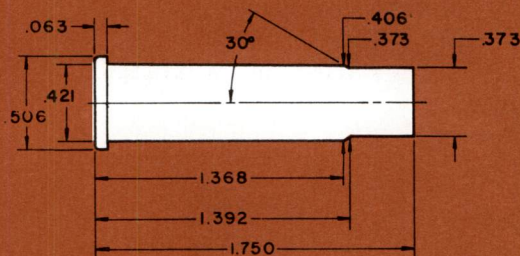
#3572 JTC-SIL
Ballistic Coefficient — .181
C.O.L. — 1.580"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	16.9 gr.	18.2 gr.	19.5 gr.	20.8 gr.		
WIN 296	18.0 gr.	19.4 gr.	20.8 gr.	22.2 gr.	23.5 gr.	24.9 gr.
IMR 4227	20.7 gr.	21.9 gr.	23.1 gr.			

See Ballistics Tables on pages 316-319, 416-417, Vol. II

 Indicates maximum load • use with caution



357 HERRETT

PISTOL: T/C CONTENDER
BARREL: 12", 1 in 14" TWIST
CASE: HORNADY/FRONTIER REF.
PRIMER: WINCHESTER WLR

BULLET DIA.: .357" - .358"
MAXIMUM C.O.L.: 2.400"
MAX. CASE LENGTH: 1.750"
CASE TRIM LENGTH: 1.740"

Steve Herrett and Bob Milek invented several powerful handgun cartridges. The first was the 30 Herrett, a shortened .30-30 Winchester case. It was more efficient in shorter barrels than the parent case, yet provided sufficient power for deer hunting. Seeking a better cartridge for larger game, they necked up the 30 Herrett to 357 caliber. While useable, higher velocity was desired, and accordingly, the case was lengthened by .15 inch providing space for more powder thereby producing higher velocity and higher energies. This last and largest case design named the 357 Herrett was introduced by Thompson/Center as a standard caliber in 1975.

In reforming, careful sizing of cases is critical to accuracy and performance. If cases are sized too much, ignition is poor and case life dwindles severely; if cases are not sized enough and the action shuts hard, accuracy will suffer and premature signs of pressure will appear. Proper adjustment of the size die can be accomplished by rotating the size die in one sixteenth of a revolution at a time and trying the sized case in the action with each adjustment. When the action closes easily on the sized case, the proper die adjustment has been obtained.

Results with the 357 Herrett revealed that uniform and accurate loads were obtainable only in a small range at near maximum pressure levels. With the large case capacity and short barrel, best results were obtained with the heavier bullets (158 grain JHP, 180 grain SSSP, and 200 grain SP).

The 357 Herrett makes a superb hunting handgun cartridge and is equally effective for the popular sport of Metallic Silhouette Shooting.

125 GRAIN BULLETS:

SECTIONAL DENSITY: .140
DIAMETER: .357"

#35710 HP/XTP
Ballistic Coefficient — .151
C.O.L. — 2.065"



#35730 FP/XTP
Ballistic Coefficient — .148
C.O.L. — 2.065"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
H110		18.3 gr.	20.1 gr.	21.9 gr.	23.7 gr.
WIN 296		19.3 gr.	21.2 gr.	23.1 gr.	
IMR 4227	19.4 gr.	20.4 gr.	21.5 gr.	22.6 gr.	
MP 5744	22.6 gr.	24.1 gr.	25.5 gr.	27.0 gr.	
AA 1680		27.4 gr.	28.5 gr.	30.9 gr.	33.3 gr.

See Ballistics Tables on pages 299-302, 302-306, Vol. II

140 GRAIN BULLETS:

SECTIONAL DENSITY: .157
DIAMETER: .357"

#35740 HP/XTP
Ballistic Coefficient — .169
C.O.L. — 2.065"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
H110	17.5 gr.	18.6 gr.	20.0 gr.	21.5 gr.	22.9 gr.
WIN 296	17.7 gr.	19.1 gr.	20.5 gr.	21.9 gr.	23.3 gr.
IMR 4227	18.7 gr.	20.1 gr.	21.5 gr.	22.9 gr.	
MP 5744	21.8 gr.	23.3 gr.	24.7 gr.	26.1 gr.	27.6 gr.
AA 1680			26.8 gr.	29.2 gr.	31.6 gr.

See Ballistics Tables on pages 306-309, Vol. II

 Indicates maximum load • use with caution

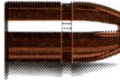
158 GRAIN BULLETS:

SECTIONAL DENSITY: .177
DIAMETER: .357"

#35750 HP/XTP
Ballistic Coefficient — .206
C.O.L. — 2.065"



#35780 FP/XTP
Ballistic Coefficient — .199
C.O.L. — 2.065"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
H110	18.3 gr.	19.9 gr.	21.5 gr.		
WIN 680			23.9 gr.	26.1 gr.	28.4 gr.
MP 5744	22.6 gr.	23.8 gr.	25.0 gr.		
RL-7		22.9 gr.	25.4 gr.	28.0 gr.	
AA 1680		26.4 gr.	28.6 gr.	30.8 gr.	

See Ballistics Tables on pages 309-313, 313-316, 414, 415, Vol. II

160 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .357"

#3572 JTC-SIL
Ballistic Coefficient — .181
C.O.L. — 2.065"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
H110	18.3 gr.	19.9 gr.	21.5 gr.		
WIN 680			23.9 gr.	26.1 gr.	28.4 gr.
MP 5744	22.6 gr.	23.8 gr.	25.0 gr.		
RL-7		22.9 gr.	25.4 gr.	28.0 gr.	
AA 1680		26.4 gr.	28.6 gr.	30.8 gr.	

See Ballistics Tables on pages 316-319, 416-417, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .201
DIAMETER: .357" - .358"

#3505 SSSP

Ballistic Coefficient — .248
C.O.L. — 2.390"

**#3577 JTC-SIL**

Ballistic Coefficient — .232
C.O.L. — 2.040"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
WIN 680			22.1 gr.	24.8 gr.	27.6 gr.
RL-7		21.3 gr.	24.2 gr.	27.1 gr.	
AA 1680			25.3 gr.	28.8 gr.	
IMR 4198	21.1 gr.	23.0 gr.	25.9 gr.	28.9 gr.	
H4198	24.2 gr.	26.7 gr.	29.1 gr.		

See Ballistics Tables on pages 183-185, 319-322, 417-418, 418-419, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP

Ballistic Coefficient — .282
C.O.L. — 2.400"

**#3515 RN**

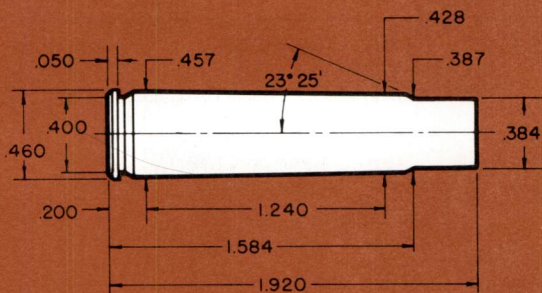
Ballistic Coefficient - .195
C.O.L. — 2.340"



POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
WIN 680		20.2 gr.	22.1 gr.	24.1 gr.	26.0 gr.
RL-7	19.1 gr.	21.6 gr.	24.1 gr.		
IMR 4198		22.7 gr.	25.2 gr.	27.8 gr.	
AA 1680		25.6 gr.	27.3 gr.	29.0 gr.	
H4198	23.3 gr.	25.9 gr.	28.4 gr.		

See Ballistics Tables on pages 185-187, 187-189, 419-420, 420-421, Vol. II

 Indicates maximum load • use with caution



35 REMINGTON

PISTOL: REMINGTON XP-100
BARREL: 15", 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .358"
MAXIMUM C.O.L.: 2.545"
MAX. CASE LENGTH: 1.920"
CASE TRIM LENGTH: 1.910"

In 1908 Remington introduced the 35 Remington in their Model 8 semi-automatic rifle and later in their Model 14, 141, and 760 pump action rifles and the Model 81 semi-automatic rifle. The 35 Remington is a short range, woods type hunting cartridge that is a favorite of deer hunters who hunt the crowded areas and need a short, fast handling, and effective deer rifle.

With the rising popularity of Handgun Silhouette shooting and handgun hunting, the 35 Remington cartridge enjoys an increased following. Thompson Center Arms Company offers their single shot Contender pistol in the venerable 35 Remington cartridge as does Remington in their XP-100 which was used for this data.

The XP-100 is a bolt action pistol. It is quite strong and very accurate. Because it does not have a tubular magazine, pointed bullets can be used. Perhaps the best choice for hunting is the Hornady 180 grain single shot pistol bullet while either the Hornady 200 grain spire point or roundnose could be used for silhouette events.

This data can be used in the Thompson-Center Contender pistol and should be considered maximum. Case life in the Contender might be increased with less than near maximum loads. As always, approach maximum loads with caution.

180 GRAIN BULLETS:

SECTIONAL DENSITY: .201
DIAMETER: .358"

#3505 SSSP
Ballistic Coefficient — .248
C.O.L. — 2.550"



POWDER	VELOCITY						
	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps
RL-7	28.1 gr.	29.2 gr.	30.2 gr.	31.2 gr.	32.2 gr.		
H4198	29.2 gr.	30.0 gr.	30.9 gr.	31.7 gr.	32.6 gr.		
H322			34.4 gr.	35.4 gr.	36.5 gr.	37.5 gr.	38.6 gr.
AA 2230	35.3 gr.	36.1 gr.	37.0 gr.	37.8 gr.	38.7 gr.		
IMR 3031	35.9 gr.	36.7 gr.	37.6 gr.	38.4 gr.	39.2 gr.		
IMR 4895	37.8 gr.	38.7 gr.	39.7 gr.				
WIN 748	40.6 gr.	41.5 gr.	42.5 gr.	43.4 gr.			

See Ballistics Tables on pages 183-185, 418-419, Vol. II

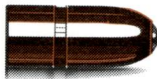
200 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .358"

#3510 SP
Ballistic Coefficient — .282
C.O.L. — 2.540"

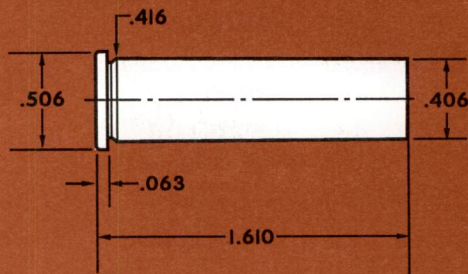


#3515 RN
Ballistic Coefficient — .195
C.O.L. — 2.510"



POWDER	VELOCITY				
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps
RL-7	26.1 gr.	27.1 gr.	28.2 gr.	29.3 gr.	
H4198	27.0 gr.	28.0 gr.	28.9 gr.		
H322		31.6 gr.	32.4 gr.	33.2 gr.	34.1 gr.
AA 2230	33.0 gr.	33.7 gr.	34.4 gr.	35.1 gr.	35.8 gr.
IMR 3031	34.5 gr.	35.1 gr.	35.8 gr.		
H4895	35.1 gr.	36.0 gr.	37.0 gr.	38.0 gr.	39.0 gr.
IMR 4064	36.0 gr.	37.0 gr.	38.0 gr.	39.0 gr.	40.0 gr.
WIN 748	37.6 gr.	38.4 gr.	39.3 gr.		

See Ballistics Tables on pages 185-187, 187-189, 419-420, 420-421, Vol. II



375 SUPER MAGNUM

TEST PISTOL: DAN WESSON
BARREL: 8", 1 in 18³/₄" TWIST
CASE: WINCHESTER REFORMED
PRIMER: WINCHESTER WLR

BULLET DIAMETER: .375"
MAXIMUM C.O.L.: 2.080"
MAX. CASE LENGTH: 1.610"
CASE TRIM LENGTH: 1.600"

The 375 Super Magnum is another cartridge developed and popularized by Elgin Gates for metallic silhouette shooting. It is one of a series of 1.610" cartridges, including a prototype 357 Maximum and the 445 Super Magnum.

The 375 Super Magnum is based on the 375 Winchester case trimmed to 1.610". Cases can be made, or at one time were available from IHMSA. Cases should not be made from 30-30 cases since they have thinner brass in the head area compared to the 375 Winchester brass. The thicker brass of the 375 Winchester is better for handling the pressures of the 375 Super Magnum.

Whether you are a hunter or a metallic silhouette shooter, the 375 Super Magnum has the power and accuracy needed to be successful.

220 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .375"

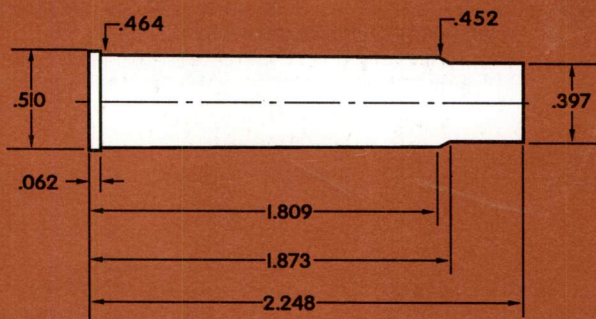
#3705 FP
Ballistic Coefficient — .217
C.O.L. — 2.080"



POWDER	VELOCITY					
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
2400	14.4 gr.	15.6 gr.	16.7 gr.	17.8 gr.	18.9 gr.	
IMR 4227	18.4 gr.	19.3 gr.	20.1 gr.	20.9 gr.	21.8 gr.	
H110	19.2 gr.	20.1 gr.	20.9 gr.	21.8 gr.	22.6 gr.	
WIN 296	20.4 gr.	21.0 gr.	21.6 gr.	22.3 gr.	22.9 gr.	
WIN 680	21.3 gr.	22.2 gr.	22.9 gr.	23.8 gr.	24.7 gr.	25.5 gr
RL-7	23.6 gr.	24.3 gr.	25.1 gr.	25.9 gr.	26.6 gr.	

See Ballistics Tables on pages 193-195, Vol. II

Indicates maximum load • use with caution



375 JDJ

TEST PISTOL: T/C CONTENDER
BARREL: 14" 1 in 12" TWIST
CASE: REMINGTON REFORMED
PRIMER: FEDERAL 210

BULLET DIAMETER: .375"
MAXIMUM C.O.L.: 2.975"
MAX. CASE LENGTH: 2.240"
CASE TRIM LENGTH: 2.230"

JDJ are the initials of J.D. Jones, president of SSK Industries, a firm specializing in producing extremely powerful handguns, often referred to as "hand cannons".

The 375 JDJ is one of the most popular of J.D.'s cartridges, and it is capable of not only silhouette shooting but medium and large game hunting. Even elephants have been taken with this potent wildcat.

The cartridge is based on the 444 Remington case necked down to hold a .375 caliber bullet. The 220 grain flat point bullets can be propelled as fast from the .375 JDJ as from the .375 Winchester Big Bore, making it an effective game cartridge. The 270 grain bullet can reach up to 2000 fps while three powders produced 1900 fps with the 300 grain bullet.

220 GRAIN BULLETS:

SECTIONAL DENSITY: .223
DIAMETER: .375"

#3705 FP

Ballistic Coefficient — .217
C.O.L. — 2.750"



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
MP5744	31.3 gr.	33.3 gr.	35.4 gr.	37.5 gr.	
IMR 4198	32.7 gr.	34.8 gr.	36.9 gr.	39.1 gr.	
RL-7	33.1 gr.	35.9 gr.	38.6 gr.	41.3 gr.	
H322	38.6 gr.	41.4 gr.	44.1 gr.	46.9 gr.	49.6 gr.
H4895	42.4 gr.	44.7 gr.	47.0 gr.	49.4 gr.	51.7 gr.

See Ballistics Tables on pages 193-195, Vol. II

270 GRAIN BULLETS:

SECTIONAL DENSITY: .274
DIAMETER: .375"

#3710 SP

Ballistic Coefficient — .380
C.O.L. — 2.975"

**#3715 RN**

Ballistic Coefficient — .253
C.O.L. — 2.995"



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	1950 fps	2000 fps
H322	39.1 gr.	41.0 gr.	43.0 gr.	43.9 gr.	44.9 gr.
AA 2460	39.3 gr.	42.3 gr.	45.3 gr.		
H4895	43.9 gr.	45.3 gr.	46.7 gr.	47.4 gr.	48.0 gr.
IMR 4064	44.3 gr.	46.2 gr.	48.2 gr.	49.2 gr.	

See Ballistics Tables on pages 195-197, 197-199, Vol. II

 Indicates maximum load • use with caution

300 GRAIN BULLETS:

SECTIONAL DENSITY: .305
DIAMETER: .375"

#3720 RN
Ballistic Coefficient — .250
C.O.L. — 2.970"



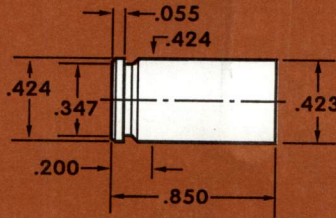
#3727 FMJ-RN
Ballistic Coefficient — .275
C.O.L. — 2.950"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1850 fps	1900 fps
H322	37.9 gr.	39.7 gr.	41.5 gr.	42.4 gr.	
H4895	38.6 gr.	41.1 gr.	43.6 gr.	44.8 gr.	46.0 gr.
IMR 4064	41.9 gr.	44.0 gr.	46.1 gr.	47.1 gr.	48.1 gr.
WIN 748	43.8 gr.	46.1 gr.	48.5 gr.	49.6 gr.	50.8 gr.

See Ballistics Tables on pages 199-201, 201-203, 203-205, Vol. II

 Indicates maximum load • use with caution



40 S&W

TEST PISTOL: S&W MODEL 4006
BARREL: 4", 1 in 16" TWIST
CASE: HORNADY
PRIMER: WINCHESTER WSP

BULLET DIAMETER: .400"
MAXIMUM C.O.L.: 1.135"
MAX. CASE LENGTH: .850"
CASE TRIM LENGTH: .840"

In the late 1980's, 10mm/40 caliber cartridges were a popular new development. The powerful 10mm auto was available from a number of handgun and ammunition manufacturers. It propelled a 40 caliber bullet with 600 foot pounds of energy, enough for short range deer hunting with a Colt 1911 sized pistol.

The FBI during this time, was evaluating their sidearms and, after a series of comparative tests, decided to adopt a reduced 10mm load. This load, using a 180 grain bullet at approximately 975 fps, performed best in their evaluation in penetration, accuracy, expansion and recoil. Engineers at Smith and Wesson felt that this performance could be achieved in a case shorter than the 10mm Auto and possibly a smaller pistol could be developed for this new round. Smith and Wesson and Winchester engineers went to work and early in 1990 announced a new cartridge, the 40 S&W and a new pistol. The 40 S&W is similar in length to the 9mm Luger and accordingly a 9mm sized pistol was modified for it, producing the Model 4006. Many in law enforcement feel that the 40 S&W will be the cartridge of the future and significant changes in law enforcement sidearms will occur. This is particularly interesting since the police, following the military, had recently begun the switch to the 9mm.

Whether the 40 S&W will replace the 9mm Luger, the 45 ACP, the 38 Special, the 357 Magnum or the 41 AE, only time will tell. However, several shooters have noted that a cartridge with a similar bullet and ballistics has already been around for over 100 years. The 38-40 Winchester has survived because it offers a 40 caliber bullet at good, medium velocity. Handguns with good performance survive and the 40 S&W will probably be with us for a long time.

In our test, we reached 1200 fps with the 155 grain XTP/HP, over 1000 fps with the 180 grain XTP/HP and over 900 fps with either 200 grain bullet.

155 GRAIN BULLETS:

SECTIONAL DENSITY: .138
DIAMETER: .400"

#40000 HP/XTP
Ballistics Coefficient — .137
C.O.L. — 1.125"



POWDER	VELOCITY						
	900 fps	950 fps	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps
Bullseye	4.5 gr.	4.9 gr.	5.3 gr.	5.6 gr.	6.0 gr.		
WIN 231	4.9 gr.	5.3 gr.	5.6 gr.	5.9 gr.			
WIN WSF	5.8 gr.	6.1 gr.	6.5 gr.	6.8 gr.	7.2 gr.	7.5 gr.	
SR 4756	5.9 gr.	6.2 gr.	6.6 gr.	6.9 gr.	7.2 gr.	7.5 gr.	
800X			6.1 gr.	7.0 gr.	7.8 gr.	8.6 gr.	
AA #5	6.4 gr.	6.8 gr.	7.2 gr.	7.5 gr.	7.9 gr.		
Solo 1500	6.9 gr.	7.2 gr.	7.5 gr.	7.8 gr.	8.1 gr.	8.4 gr.	
HS-6	7.1 gr.	7.4 gr.	7.8 gr.	8.1 gr.	8.4 gr.		
WIN 571	8.0 gr.	8.4 gr.	8.8 gr.	9.3 gr.	9.7 gr.		
Blue Dot			9.2 gr.	9.7 gr.	10.2 gr.	10.7 gr.	11.2 gr.
AA #7	7.7 gr.	8.4 gr.	9.2 gr.	9.9 gr.			

See Ballistics Tables on pages 328-329, Vol. II



Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .160
DIAMETER: .400"

#40040 HP/XTP
Ballistic Coefficient — .164
C.O.L. — 1.125"



POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
Bullseye	3.9 gr.	4.3 gr.	4.6 gr.			
WIN 231	4.3 gr.	4.7 gr.	5.0 gr.			
WIN WSF	4.8 gr.	5.1 gr.	5.5 gr.	5.8 gr.	6.2 gr.	
SR 4756	5.1 gr.	5.3 gr.	5.6 gr.	5.9 gr.	6.1 gr.	
800-X		5.8 gr.	6.2 gr.	6.7 gr.	7.2 gr.	7.6 gr.
AA #5	5.7 gr.	6.0 gr.	6.3 gr.	6.5 gr.		
Solo 1500	5.9 gr.	6.2 gr.	6.5 gr.	6.8 gr.	7.1 gr.	
HS-6	6.0 gr.	6.4 gr.	6.7 gr.	7.0 gr.		
WIN 571	6.7 gr.	7.2 gr.	7.6 gr.	8.1 gr.		
Blue Dot	7.1 gr.	7.5 gr.	7.8 gr.	8.2 gr.	8.5 gr.	
AA #7		7.4 gr.	8.1 gr.	8.7 gr.		

See Ballistics Tables on pages 329-330, 421-422, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .400"

#4007 FMJ-FP
Ballistic Coefficient — .182
C.O.L. — 1.125"



#40060 HP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.125"

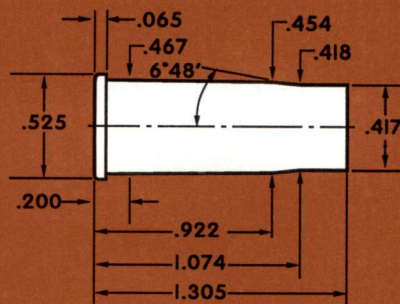


POWDER	VELOCITY					
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
Bullseye	3.4 gr.	3.7 gr.	4.0 gr.	4.3 gr.		
WIN WSF	4.0 gr.	4.4 gr.	4.7 gr.	5.0 gr.	5.4 gr.	
SR 4756	4.3 gr.	4.5 gr.	4.8 gr.	5.1 gr.	5.3 gr.	
AA #5	4.7 gr.	5.0 gr.	5.3 gr.	5.6 gr.	6.0 gr.	
Solo 1500	5.0 gr.	5.2 gr.	5.5 gr.	5.7 gr.	6.0 gr.	
800-X		4.8 gr.	5.3 gr.	5.8 gr.	6.2 gr.	6.7 gr.
HS-6	5.1 gr.	5.5 gr.	5.9 gr.	6.3 gr.		
WIN 571	5.9 gr.	6.3 gr.	6.7 gr.	7.0 gr.	7.4 gr.	
Blue Dot	6.1 gr.	6.4 gr.	6.8 gr.	7.1 gr.	7.4 gr.	
AA #7		6.8 gr.	7.3 gr.	7.8 gr.	8.3 gr.	

See Ballistics Tables on pages 330-332, 332-333, 422, 423, Vol. II



Indicates maximum load • use with caution



38-40 WINCHESTER

PISTOL: RUGER BLACKHAWK
BARREL: 6½", 1 in 20 TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .400"
MAXIMUM C.O.L.: 1.590"
MAX. CASE LENGTH: 1.305"
CASE TRIM LENGTH: 1.295"

The 38-40 was introduced by Winchester in their Model 1873 lever action rifle. Based on the earlier 44-40 cartridge, the 38-40 originally used 40 grains of black powder. It uses a 40 caliber bullet, not a 38 caliber as the cartridge name implies. Consequently, the introduction of the 10mm auto has produced a new generation of bullets suitable for the 38-40.

In 1884, Colt introduced their single action army revolver in 38-40, marking them 38 WCF. Other manufacturers, such as Remington, Marlin and Smith and Wesson offered firearms in this caliber.

At one time, Winchester offered a high-velocity load for rifles. These rifle loads caused problems in revolvers, especially those early revolvers made for black powder. This data was developed in the modern and strong Ruger Blackhawk revolver. It should only be used in modern firearms in good condition and comparable strength.

Caution and care must be used in working with 38-40 brass. It is very thin and easily crushed during resizing and bullet seating. Although a rimmed case, care should be taken in not setting the shoulder back during resizing. Case life will be better if the case closely fits the chamber.

155 GRAIN BULLETS:

SECTIONAL DENSITY: .138
DIAMETER: .400"

#40000 HP/XTP
Ballistic Coefficient — .137
C.O.L. — 1.590"



POWDER	VELOCITY					
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
Unique	7.2 gr.	7.8 gr.	8.4 gr.	9.0 gr.	9.6 gr.	
SR 4756	7.8 gr.	8.3 gr.	8.7 gr.	9.2 gr.		
Solo 1500	9.5 gr.	9.9 gr.	10.3 gr.	10.7 gr.	11.1 gr.	11.6 gr.
AA #7	11.2 gr.	11.9 gr.	12.6 gr.	13.3 gr.		
2400	12.4 gr.	13.1 gr.	13.9 gr.	14.6 gr.	15.3 gr.	
IMR 4227	15.5 gr.	16.6 gr.	17.6 gr.	18.6 gr.	19.7 gr.	

See Ballistics Tables on pages 328-329, Vol. II

180 GRAIN BULLETS:

SECTIONAL DENSITY: .160
DIAMETER: .400"

#40040 HP/XTP
Ballistic Coefficient — .164
C.O.L. — 1.590"



POWDER	VELOCITY				
	900 fps	950 fps	1000 fps	1050 fps	1100 fps
Unique	7.0 gr.	7.6 gr.	8.1 gr.	8.7 gr.	9.3 gr.
SR 4756	7.3 gr.	7.8 gr.	8.3 gr.	8.8 gr.	
Solo 1500	8.7 gr.	9.2 gr.	9.6 gr.	10.1 gr.	10.5 gr.
AA #9	11.1 gr.	11.9 gr.	12.7 gr.	13.5 gr.	14.3 gr.
2400	11.5 gr.	12.3 gr.	13.0 gr.	13.7 gr.	14.5 gr.
IMR 4227	14.4 gr.	15.4 gr.	16.5 gr.	17.5 gr.	18.5 gr.

See Ballistics Tables on pages 329-330, 421-422, Vol. II



Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .400"

#4007 FMJ/FP
Ballistic Coefficient — .182
C.O.L. — 1.590"



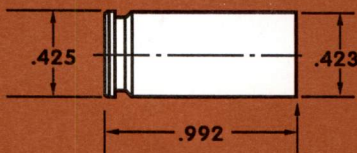
#40060 HP/XTP
Ballistic Coefficient — .199
C.O.L. — 1.590"



POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
Unique	6.4 gr.	6.9 gr.	7.4 gr.	7.9 gr.	8.4 gr.	
SR 4756	7.1 gr.	7.6 gr.	8.1 gr.	8.5 gr.	9.0 gr.	
Solo 1500	8.0 gr.	8.5 gr.	8.9 gr.	9.4 gr.	9.8 gr.	10.3 gr.
2400			11.7 gr.	12.4 gr.	13.0 gr.	13.7 gr.
AA #9	10.6 gr.	11.2 gr.	11.8 gr.	12.5 gr.	13.1 gr.	13.8 gr.
IMR 4227			15.0 gr.	16.2 gr.	17.4 gr.	18.6 gr.

See Ballistics Tables on pages 330-332, 332-333, 422, 423, Vol. II

38-40 WINCHESTER



10mm AUTO

PISTOL: COLT DELTA ELITE
BARREL: 5", 1 in 16" TWIST
CASE: HORNADY
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .400"
MAXIMUM C.O.L.: 1.260"
MAX. CASE LENGTH: .992"
CASE TRIM LENGTH: .985"

A number of shooters and experimenters have wanted a more powerful semi-automatic pistol cartridge than the 9mm Parabellum, .38 Super or .45 ACP. The answer appeared to be a totally new cartridge, the 10mm auto. Whit Collins, John Adams, and Irving Stone with the assistance of Jeff Cooper originally used cut off .30 Remington cases with a 180 grain bullet from the .38-40 Winchester. This experimental cartridge was tested in a modified Browning High-Power. The Bren Ten was the first production firearm for the new cartridge but problems arose in producing the pistol and it is no longer available.

Colt, however, realized the potential of the 10mm auto and started producing a modified M1911, known as the Delta Elite. Several other manufacturers now offer firearms in 10mm Auto.

In 1989, following extensive tests, the FBI announced it would be changing its official sidearm caliber to 10mm Auto. The 10mm Auto caliber is also currently in the offing for many law enforcement agencies. It would seem the 10mm will become the law enforcement answer the 41 Magnum was supposed to be.

Hornady offers three different bullet weights: 155 gr., 180 gr. and the 200 gr. Velocities and energies are impressive as is accuracy. Best overall results were obtained with AA #7 in our testing.

155 GRAIN BULLETS:

SECTIONAL DENSITY: .138
DIAMETER: .400"

#40000 HP/XTP
Ballistic Coefficient — .137
C.O.L. — 1.260"



POWDER	VELOCITY							
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
WIN 231	5.8 gr.	6.1 gr.	6.5 gr.	6.9 gr.				
Unique	6.6 gr.	6.9 gr.	7.3 gr.	7.7 gr.	8.0 gr.			
Herco		7.1 gr.	7.5 gr.	8.0 gr.	8.5 gr.	8.9 gr.		
800-X	6.9 gr.	7.5 gr.	8.1 gr.	8.7 gr.	9.3 gr.	9.9 gr.		
AA #5	8.1 gr.	8.4 gr.	8.8 gr.	9.2 gr.	9.6 gr.			
HS-6	8.4 gr.	8.9 gr.	9.3 gr.	9.8 gr.	10.2 gr.	10.7 gr.		
HS-7	9.1 gr.	9.7 gr.	10.2 gr.	10.8 gr.	11.3 gr.	11.9 gr.		
Blue Dot		10.0 gr.	10.5 gr.	11.1 gr.	11.6 gr.	12.1 gr.	12.7 gr.	
AA #7	9.7 gr.	10.3 gr.	10.9 gr.	11.5 gr.	12.1 gr.	12.7 gr.	13.3 gr.	13.9 gr.

See Ballistics Tables on pages 328-329, Vol. II

 Indicates maximum load • use with caution

180 GRAIN BULLETS:

SECTIONAL DENSITY: .152
DIAMETER: .400"

#40040 HP/XTP
Ballistic Coefficient — .164
C.O.L. — 1.260"



10mm AUTO

POWDER	VELOCITY						
	900 fps	950 fps	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps
WIN 231	5.1 gr.	5.4 gr.	5.8 gr.	6.1 gr.			
Unique	5.5 gr.	5.9 gr.	6.2 gr.	6.5 gr.			
WIN WSF	5.4 gr.	5.8 gr.	6.2 gr.	6.6 gr.	6.9 gr.	7.3 gr.	
SR 4756	5.7 gr.	6.1 gr.	6.4 gr.	6.8 gr.	7.1 gr.	7.5 gr.	
AA #5	6.3 gr.	6.7 gr.	7.0 gr.	7.4 gr.	7.7 gr.	8.1 gr.	
800-X	6.3 gr.	6.7 gr.	7.1 gr.	7.5 gr.	7.9 gr.	8.4 gr.	8.8 gr.
Solo 1500	6.6 gr.	7.0 gr.	7.3 gr.	7.6 gr.	7.9 gr.	8.2 gr.	8.5 gr.
HS-6	7.3 gr.	7.7 gr.	8.1 gr.	8.5 gr.	8.9 gr.		
HS-7	7.9 gr.	8.4 gr.	8.8 gr.	9.3 gr.	9.7 gr.		
Blue Dot	8.0 gr.	8.5 gr.	8.9 gr.	9.3 gr.	9.8 gr.	10.2 gr.	10.6 gr.
AA #7	8.6 gr.	9.1 gr.	9.5 gr.	10.0 gr.	10.5 gr.	11.0 gr.	

See Ballistics Tables on pages 329-330, 421-422, Vol. II



Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .179
DIAMETER: .400"

#4007 FMJ-FP

Ballistic Coefficient — .182
C.O.L. — 1.260"



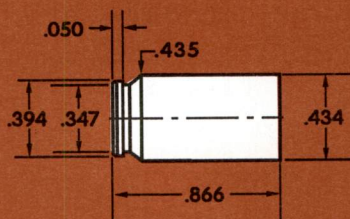
#40060 HP/XTP

Ballistic Coefficient — .199
C.O.L. — 1.260"



POWDER	VELOCITY						
	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps	1150 fps
WIN 231	4.4 gr.	4.7 gr.	5.0 gr.	5.3 gr.			
SR 4756	5.0 gr.	5.2 gr.	5.5 gr.	5.7 gr.			
Unique	4.9 gr.	5.2 gr.	5.5 gr.	5.9 gr.			
800-X		5.5 gr.	6.0 gr.	6.5 gr.	7.0 gr.	7.5 gr.	8.0 gr.
AA #5	6.3 gr.	6.7 gr.	7.2 gr.	7.6 gr.	8.0 gr.	8.4 gr.	
Blue Dot		6.7 gr.	7.1 gr.	7.6 gr.	8.0 gr.	8.5 gr.	8.9 gr.
HS-6	6.6 gr.	7.0 gr.	7.4 gr.	7.8 gr.	8.2 gr.		
HS-7		7.8 gr.	8.2 gr.	8.7 gr.	9.1 gr.	9.5 gr.	
AA #7		7.9 gr.	8.4 gr.	8.9 gr.	9.5 gr.	10.0 gr.	10.5 gr.

See Ballistics Tables on pages 330-332, 332-333, 422, 423, Vol. II



41 ACTION EXPRESS

TEST PISTOL: UZI
BARREL: 16", 1 in 18 1/2" TWIST
CASE: IMI
PRIMER: WIN WSP

BULLET DIAMETER: .410"
MAXIMUM C.O.L.: 1.150"
MAX. CASE LENGTH: .866"
CASE TRIM LENGTH: .856"

Rarely can it be said a cartridge is due to one person's efforts. But, such is the case for the 41 Action Express. Developed by Evan Whilden, vice president of Action Arms, it was to improve the performance of the Uzi submachine gun. Initial experiments produced a variety of designs (one of which was essentially the same as the 40 S&W), all were rejected except the final configuration. 41 Magnum cases were trimmed to .866" and the head was altered to match that of the 9mm Luger case. The result was a short, squat 41 caliber cartridge with a rebated rim. It would allow an owner of an Uzi or other firearm to change from 9mm to 41 AE by simply switching barrels and magazines. Other parts of the firearm, such as the extractor need not be altered.

Several manufacturers offer pistols in 41 AE, including Taurus, F.I.E., Excam and K.B.I. as well as several conversion kits from Action Arms. Factory ammunition is available from Action Arms and Samson.

Though the 41 AE is a fine cartridge, the introduction of the 10mm Auto and the 40 S&W and firearms for these cartridges from most large American manufacturers will probably spell its demise. Few bullets are available in 41 caliber, compared to 10mm, so even handloading the 41 AE doesn't offer a bright future.

Our data was obtained from a 16" barrel. Velocities in a 5" pistol barrel would probably average 100 to 150 fps lower than those listed.

The introduction and standardization of the 40 S&W may have an effect on the 41 AE. Only time will tell.

210 GRAIN BULLETS:

SECTIONAL DENSITY: .178
DIAMETER: .410"

#41000 HP/XTP
Ballistic Coefficient — .182
C.O.L. — 1.150"



#4105 JTC-SIL
Ballistic Coefficient — .187
C.O.L. — 1.150"

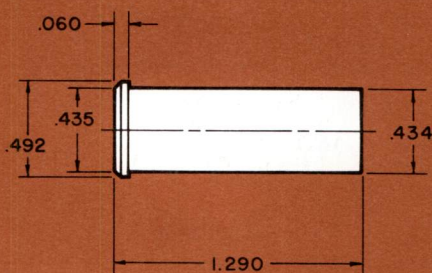


POWDER	Velocity					
	800 fps	900 fps	1000 fps	1050 fps	1100 fps	1150 fps
Bullseye	3.8 gr.	4.2 gr.	4.7 gr.	4.9 gr.	5.1 gr.	
WIN 231	4.0 gr.	4.3 gr.	4.7 gr.	4.9 gr.		
Pearl Scot	4.1 gr.	4.5 gr.	5.0 gr.	5.2 gr.	5.5 gr.	
WIN WSF	4.2 gr.	4.7 gr.	5.2 gr.	5.5 gr.	5.7 gr.	6.0 gr.
Unique	4.3 gr.	4.8 gr.	5.3 gr.	5.5 gr.	5.7 gr.	
AA #5	5.4 gr.	5.8 gr.	6.3 gr.	6.5 gr.	6.8 gr.	7.0 gr.
HS-6	5.7 gr.	6.2 gr.	6.8 gr.	7.0 gr.		
AA #7	6.6 gr.	7.3 gr.	8.1 gr.	8.5 gr.	8.8 gr.	

See Ballistics Tables on pages 333-336, 336-338, 424-425, Vol. II



Indicates maximum load • use with caution



41 MAGNUM

PISTOL: S & W MODEL 57
BARREL: 6", 1 in 18³/₄" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 150

BULLET DIAMETER: .410"
MAXIMUM C.O.L.: 1.580"
MAX. CASE LENGTH: 1.290"
CASE TRIM LENGTH: 1.280"

The 41 Magnum came into being in 1964, developed by Smith and Wesson and chambered in their Model 57 revolver. The 41 was originally designed to fill the gap between the 357 Magnum and the 44 Magnum. Initially, two loads were available — a high velocity load for hunting and a medium velocity for police work. The 41 Magnum does exactly that, it supplies increased power over the 357 with more tolerable recoil than the 44. However, its acceptance has not been widespread; instead of gaining a captivated law enforcement audience, its basic support is from the hunting fraternity, where the 41 supplies all the power needed for hunting deer, or even black bear. Interestingly, law enforcement has recently shown considerable interest in a .40 caliber cartridge at medium velocity as originally proposed in 1964.

In testing the 41 Magnum, we found that recoil was reasonable, even with full power loads, and that accuracy was more than adequate. Our Model 57 pushed the Hornady 210 grain Jacketed Hollow Point at 1400 fps, creating nearly one thousand foot pounds of muzzle energy.

210 GRAIN BULLETS:

SECTIONAL DENSITY: .178
DIAMETER: .410"

#41000 HP/XTP

Ballistic Coefficient — .182
C.O.L. — 1.580"

**#4105 JTC-SIL**

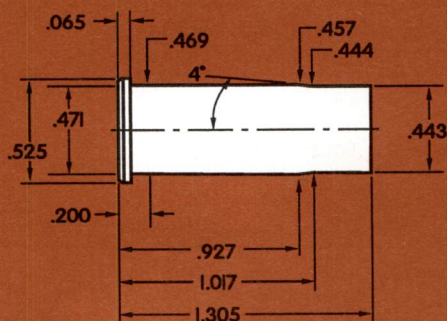
Ballistic Coefficient — .187
C.O.L. — 1.580"



POWDER	VELOCITY						
	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
800-X	9.5 gr.	10.3 gr.	11.0 gr.	11.7 gr.	12.5 gr.	13.2 gr.	
Blue Dot	10.1 gr.	11.0 gr.	11.8 gr.	12.6 gr.	13.5 gr.	14.3 gr.	
AA #7	13.1 gr.	13.6 gr.	14.2 gr.	14.7 gr.	15.3 gr.	15.9 gr.	16.4 gr.
AA #9	15.3 gr.	16.0 gr.	16.8 gr.	17.0 gr.	17.8 gr.	18.5 gr.	19.2 gr.
2400	16.0 gr.	16.8 gr.	17.6 gr.	18.4 gr.	19.2 gr.	20.0 gr.	
WIN 296	17.6 gr.	18.5 gr.	19.3 gr.	20.1 gr.	20.9 gr.	21.7 gr.	22.6 gr.
MP 5744	18.2 gr.	19.1 gr.	20.0 gr.	20.8 gr.	21.7 gr.	22.6 gr.	
IMR 4227	18.2 gr.	19.3 gr.	20.5 gr.				
H110	19.5 gr.	20.0 gr.	20.6 gr.	21.1 gr.	21.7 gr.	22.2 gr.	22.7 gr.

See Ballistics Tables on pages 333-336, 336-338, 424-425, Vol. II

 Indicates maximum load • use with caution



44-40

TEST PISTOL: RUGER BLACKHAWK
BARREL: 7½, 1 in 20" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 1.600"
MAX. CASE LENGTH: 1.305"
CASE TRIM LENGTH: 1.295"

Warning: This data is for use in modern firearms designed for smokeless powders.

Introduced in 1873, the 44-40 has managed to survive due to a small but loyal following. The 44-40 and its slightly smaller relative, the 38-40, were originally loaded with black powder. Firearms built during the black powder era are not safe to use with today's higher pressure smokeless powders. Our test firearm, a Ruger Blackhawk came with two cylinders: one in 44 magnum and one in 44-40. While the firearm used could withstand higher pressures, the thin brass cases could not. These cases must be handled with care. A misaligned case or too much crimp will result in a crumpled case.

During our load development, we experienced difficulties with bullets weighing over 200 grains. Factory and fired cases have a strong cannelure, designed to keep the factory loaded 200 grain bullet from being pushed too deep. Heavier bullets caused this cannelure to bulge outward, causing chambering problems. However, the 44-40 is probably at its best with 180 or 200 grain bullets. During our testing 2400 and IMR 4227 performed well.

180 GRAIN BULLETS:

SECTIONAL DENSITY: .143
DIAMETER: .430"

#44050 HP/XTP
Ballistic Coefficient — .138
C.O.L. — 1.600"



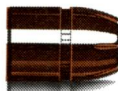
POWDER	VELOCITY					
	900 fps	1000 fps	1100 fps	1150 fps	1200 fps	1250 fps
Unique	8.2 gr.	9.1 gr.	10.0 gr.	10.4 gr.		
WIN WSF	8.7 gr.	9.6 gr.	10.6 gr.	11.1 gr.		
SR 4756	9.5 gr.	10.2 gr.	10.9 gr.	11.2 gr.		
Solo 1500	10.9 gr.	11.5 gr.	12.2 gr.	12.5 gr.	12.8 gr.	13.1 gr.
2400		16.5 gr.	17.2 gr.	17.6 gr.	17.9 gr.	18.2 gr.

See Ballistics Tables on pages 338-342, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .155
DIAMETER: .430"

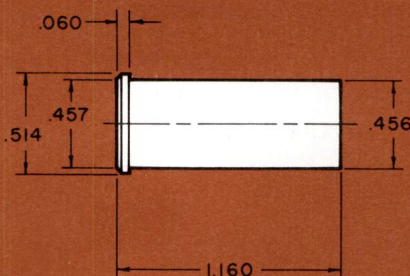
#44100 HP/XTP
Ballistic Coefficient — .170
C.O.L. — 1.600"



POWDER	VELOCITY					
	800 fps	900 fps	1000 fps	1050 fps	1100 fps	1150 fps
Unique	7.3 gr.	8.3 gr.	9.3 gr.	9.8 gr.		
WIN WSF	7.4 gr.	8.5 gr.	9.5 gr.	10.0 gr.		
SR 4756	8.8 gr.	9.4 gr.	10.1 gr.	10.4 gr.		
Solo 1500	9.7 gr.	10.4 gr.	11.1 gr.	11.5 gr.		
2400		14.3 gr.	15.3 gr.	15.7 gr.	16.2 gr.	
AA #9		14.1 gr.	15.2 gr.	15.8 gr.	16.4 gr.	16.9 gr.
IMR 4227		17.6 gr.	18.9 gr.	19.6 gr.	20.3 gr.	20.9 gr.

See Ballistics Tables on pages 342-345, 425-426, Vol. II

Indicates maximum load • use with caution



44 SPECIAL

PISTOL: CHARTER ARMS
BARREL: 3", 1 in 18" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 1.500"
MAX. CASE LENGTH: 1.160"
CASE TRIM LENGTH: 1.150"

Introduced by Smith and Wesson in 1907, the 44 Special was developed to improve on its black powder predecessor, the 44 Russian, a big bore target cartridge. The 44 Special case was longer than the 44 Russian and could more easily handle the new, bulkier smokeless powder. With the development of the 44 Magnum, the 44 Special rapidly lost popularity. Lamentably, there are few large frame Colt and Smith & Wesson revolvers available; in fact, other than a brief production by Smith and Wesson of their Model 624, the only revolver now chambered for the 44 Special is the Charter Arms five-shot Bulldog, a pistol designed basically for self-defense. The 44 Special has more power than the 38's without the recoil of the big magnums.

When comparing the 44 Magnum and 44 Special, the 44 Magnum operates at 40,000 c.u.p. maximum, and the 44 Special works at only 14,000 c.u.p., a substantial difference. Hornady's new XTP bullets offer good accuracy and expansion, even at low velocity. Best in the Bulldog, perhaps, is the 180 grain HP/XTP.

180 GRAIN BULLETS

SECTIONAL DENSITY: .139
DIAMETER: .430"

#44050 HP/XTP
Ballistic Coefficient — .138
C.O.L. — 1.500"



44 SPECIAL

POWDER	VELOCITY				
	750 fps	800 fps	850 fps	900 fps	950 fps
Bullseye	5.0 gr.	5.3 gr.	5.6 gr.		
WIN 231		6.2 gr.	6.5 gr.	6.8 gr.	
Unique	6.1 gr.	6.3 gr.	6.6 gr.		
SR 4756	6.8 gr.	7.1 gr.	7.3 gr.	7.6 gr.	7.8 gr.
800-X		7.3 gr.	7.9 gr.		
Solo 1500	8.2 gr.	8.5 gr.	8.8 gr.		
AA #5		8.8 gr.	9.3 gr.	9.8 gr.	
AA #7		10.4 gr.	11.1 gr.	11.8 gr.	
2400		11.2 gr.	11.8 gr.		
AA #9		12.7 gr.	13.1 gr.	13.5 gr.	13.9 gr.

See Ballistics Tables on pages 338-342, Vol. II

 Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .155
DIAMETER: .430"

#44100 HP/XTP
Ballistic Coefficient — .170
C.O.L. — 1.500"



POWDER	VELOCITY			
	700 fps	750 fps	800 fps	850 fps
Solo 1000	4.4 gr.	4.7 gr.		
Bullseye	4.5 gr.	5.0 gr.		
WIN 231	5.2 gr.	5.7 gr.	6.1 gr.	
Unique	6.0 gr.	6.2 gr.	6.5 gr.	
SR 4756	6.5 gr.	6.7 gr.	6.9 gr.	
800-X	6.1 gr.	6.8 gr.	7.5 gr.	
AA #5	7.2 gr.	7.9 gr.	8.4 gr.	
Solo 1500	7.7 gr.	8.0 gr.	8.3 gr.	8.6 gr.
HS-6	8.1 gr.	8.6 gr.	9.0 gr.	9.3 gr.
AA #7	8.1 gr.	8.8 gr.	10.4 gr.	11.0 gr.
2400	9.6 gr.	10.7 gr.	11.6 gr.	
AA #9	11.5 gr.	12.1 gr.	12.6 gr.	13.0 gr.

See Ballistics Tables on pages 342-345, 425-426, Vol. II



Indicates maximum load • use with caution

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#44200 HP/XTP
Ballistic Coefficient — .205
C.O.L. — 1.500"



#4425 JTC-SIL
Ballistic Coefficient — .174
C.O.L. — 1.500"



POWDER	VELOCITY			
	600 fps	650 fps	700 fps	750 fps
Bullseye	3.8 gr.	4.2 gr.		
WIN 231	4.5 gr.	4.9 gr.		
Unique	4.9 gr.	5.2 gr.	5.5 gr.	
SR 4756		5.7 gr.	5.9 gr.	
800-X	5.5 gr.	5.9 gr.		
Solo 1500	6.9 gr.	7.1 gr.	7.4 gr.	
AA #5	6.4 gr.	6.8 gr.	7.2 gr.	
HS-6		7.1 gr.	7.4 gr.	7.8 gr.
AA #7	8.0 gr.	8.4 gr.	8.9 gr.	9.2 gr.
2400	8.9 gr.	9.4 gr.	9.9 gr.	
AA #9		10.7 gr.	11.2 gr.	11.7 gr.

See Ballistics Tables on pages 346-349, 349-352, 426-427, 427-428, Vol. II

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#4430 SWC
Ballistic Coefficient — .182
C.O.L. — 1.500"



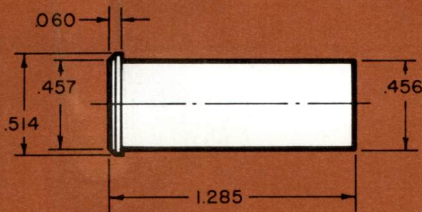
#4431 SWC/HP
Ballistic Coefficient — .204
C.O.L. — 1.500"



POWDER	VELOCITY				
	650 fps	700 fps	750 fps	800 fps	850 fps
Bullseye	4.2 gr.	4.5 gr.	4.9 gr.		
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.		
Unique	5.0 gr.	5.5 gr.	6.0 gr.		
SR 4756	5.8 gr.	6.1 gr.	6.4 gr.		
800-X	5.8 gr.	6.1 gr.	6.6 gr.		
AA #5	6.7 gr.	7.0 gr.	7.4 gr.	7.9 gr.	
Solo 1500	6.7 gr.	7.1 gr.	7.5 gr.		
HS-6		7.3 gr.	7.8 gr.	8.3 gr.	8.8 gr.
AA #9			11.4 gr.	11.9 gr.	12.4 gr.

See Ballistics Tables on pages 353-355, 355-357, Vol. II

 *Indicates maximum load • use with caution*



44 REMINGTON MAGNUM PISTOL

PISTOL: RUGER SUPER BLACKHAWK	BULLET DIAMETER: .430"
BARREL: 7½", 1 in 20" TWIST	MAXIMUM C.O.L.: 1.610"
CASE: HORNADY	MAX. CASE LENGTH: 1.285"
PRIMER: WINCHESTER WLP	CASE TRIM LENGTH: 1.275"

The 44 Remington Magnum is one of the most powerful commercial handgun cartridges available today. It was developed jointly in 1955 by Smith and Wesson and Remington. A great deal of credit for its development can be given to hunter and shooter Elmer Keith. Since its introduction in 1955, the 44 Magnum has been chambered by numerous manufacturers and has even been chambered in rifles such as the Ruger semi-auto carbine, Browning, Marlin, and Winchester lever actions.

Because of the power of this cartridge, recoil and muzzle blast are substantial. It is for this reason that not all handgunners can handle the 44 Magnum. However, using reduced loads and practice, a shooter can use this caliber accurately and effectively. The 44 Magnum is effective on deer, black bear, elk, and other large species. It also makes a fearsome law enforcement weapon for those with the ability to master the recoil and muzzle blast.

During testing, our Ruger performed exceptionally well with Blue Dot and Winchester 296 using Hornady 200 and 240 grain Jacketed Hollow Points. With the Hornady 265 grain Flat Point, best accuracy and uniformity was obtained with Winchester 296 and IMR 4227. For those shooters who are searching for practice loads and small game loads, 8.0 grains of Hercules Unique and the Hornady 240 grain Semi-Wad-cutter make an accurate and efficient combination.

180 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.139**
.430"**#44050 HP/XTP**
Ballistic Coefficient — .138
C.O.L. — 1.600"

POWDER	VELOCITY				
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps
Unique	11.4 gr.	12.4 gr.	13.5 gr.		
Blue Dot	12.2 gr.	14.3 gr.	16.4 gr.		
HS-7	17.1 gr.	17.9 gr.	18.7 gr.		
2400	19.4 gr.	20.3 gr.	22.1 gr.		
AA #9		24.2 gr.	25.4 gr.	26.6 gr.	27.8 gr.
IMR 4227	24.5 gr.	26.1 gr.	27.7 gr.	29.3 gr.	30.9 gr.
WIN 296		26.2 gr.	27.7 gr.	29.2 gr.	
H110	27.8 gr.	28.7 gr.	29.6 gr.	30.6 gr.	31.5 gr.

*See Ballistics Tables on pages 338-342, Vol. II***200 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.155**
.430"**#44100 HP/XTP**
Ballistic Coefficient — .170
C.O.L. — 1.600"

POWDER	VELOCITY				
	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps
Unique	12.4 gr.	13.0 gr.			
Blue Dot	15.6 gr.	16.3 gr.	17.0 gr.		
HS-7	17.8 gr.	18.5 gr.			
2400	20.5 gr.	21.5 gr.	22.5 gr.		
AA #9	22.7 gr.	23.5 gr.	24.3 gr.	25.1 gr.	
WIN 296	25.5 gr.	26.3 gr.	27.0 gr.	27.8 gr.	
IMR 4227	25.9 gr.	26.6 gr.	27.3 gr.	27.9 gr.	28.6 gr.
H110	26.6 gr.	27.3 gr.	27.9 gr.	28.5 gr.	29.1 gr.

See Ballistics Tables on pages 342-345, 425-426, Vol. II Indicates maximum load • use with caution

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#44200 HP/XTP
Ballistic Coefficient — .205
C.O.L. — 1.600"



#4425 JTC-SIL
Ballistic Coefficient — .174
C.O.L. — 1.600"



POWDER	VELOCITY					
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
Unique	10.7 gr.	11.4 gr.	12.1 gr.			
Blue Dot	12.0 gr.	13.3 gr.	14.6 gr.	15.8 gr.		
HS-7	15.2 gr.	15.8 gr.	16.5 gr.			
2400	16.9 gr.	17.9 gr.	18.8 gr.	19.8 gr.		
AA #9	18.6 gr.	19.2 gr.	19.9 gr.	20.6 gr.	21.2 gr.	21.9 gr.
WIN 296	21.1 gr.	21.8 gr.	22.6 gr.	23.4 gr.	24.2 gr.	
H110	21.8 gr.	22.5 gr.	23.1 gr.	23.7 gr.	24.3 gr.	24.9 gr.
IMR 4227	22.5 gr.	23.2 gr.	23.9 gr.	24.6 gr.	25.3 gr.	

See Ballistics Tables on pages 346-349, 349-352, 426-427, 427-428, Vol. II

265 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .430"

#4300 FP
Ballistic Coefficient — .189
C.O.L. — 1.610"



POWDER	VELOCITY				
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
Blue Dot	13.7 gr.	14.5 gr.			
HS-7	14.9 gr.	15.7 gr.			
2400	16.9 gr.	17.8 gr.	18.7 gr.		
AA #9	18.2 gr.	19.0 gr.	19.7 gr.	20.5 gr.	
WIN 296	20.2 gr.	21.0 gr.	21.7 gr.	22.4 gr.	23.1 gr.
H110	21.2 gr.	21.7 gr.	22.3 gr.	22.9 gr.	23.4 gr.
IMR 4227	21.4 gr.	22.2 gr.	23.0 gr.	23.8 gr.	

See Ballistics Tables on pages 207-208, Vol. II

300 GRAIN BULLETS:

SECTIONAL DENSITY: .232
DIAMETER: .430"

#44280 HP/XTP

Ballistic Coefficient — .245
C.O.L. — 1.600"



POWDER	VELOCITY					
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
Solo 1500	10.4 gr.	10.9 gr.	11.3 gr.	11.8 gr.		
Blue Dot	10.8 gr.	11.4 gr.	12.0 gr.	12.5 gr.		
HS-7	12.0 gr.	12.6 gr.	13.1 gr.	13.6 gr.		
AA #7	12.8 gr.	13.3 gr.	13.8 gr.	14.3 gr.	14.8 gr.	
2400	14.2 gr.	14.9 gr.	15.5 gr.	16.2 gr.	16.9 gr.	17.5 gr.
AA #9	14.7 gr.	15.5 gr.	16.2 gr.	17.0 gr.	17.8 gr.	18.5 gr.
H110	16.7 gr.	17.3 gr.	17.9 gr.	18.5 gr.	19.0 gr.	19.6 gr.
WIN 296	17.2 gr.	17.7 gr.	18.3 gr.	18.8 gr.	19.4 gr.	19.9 gr.

See Ballistics Tables on pages 352-353, 428-429, Vol. II

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#4430 SWC

Ballistic Coefficient — .182
C.O.L. — 1.610"



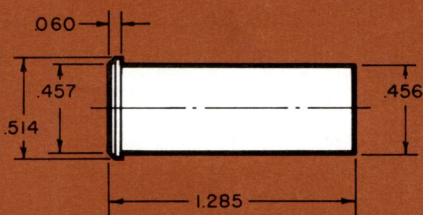
#4431 SWC/HP

Ballistic Coefficient — .204
C.O.L. — 1.610"



POWDER	VELOCITY				
	800 fps	850 fps	900 fps	950 fps	1000 fps
Bullseye	5.2 gr.	5.7 gr.	6.2 gr.	6.7 gr.	7.2 gr.
700-X	5.5 gr.	5.9 gr.	6.3 gr.	6.7 gr.	7.1 gr.
WIN 231	6.5 gr.	7.0 gr.	7.4 gr.	7.8 gr.	8.2 gr.
Unique	6.7 gr.	7.1 gr.	7.6 gr.	8.0 gr.	8.5 gr.
SR 4756	7.6 gr.	8.0 gr.	8.4 gr.	8.8 gr.	9.2 gr.
2400	11.7 gr.	12.3 gr.	13.0 gr.	13.7 gr.	14.4 gr.

See Ballistics Tables on pages 353-355, 355-357, Vol. II



44 REMINGTON MAGNUM T/C

PISTOL: T/C CONTENDER
BARREL: 14", 1 in 22" TWIST
CASE: HORNADY/FRONTIER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 1.610"
MAX. CASE LENGTH: 1.285"
CASE TRIM LENGTH: 1.275"

The 14" Thompson/Center chambered in 44 Remington Magnum, a cartridge that dates back to 1955, yielded results very near those obtained with the 44 Magnum Ruger Carbine Rifle. The 14" T/C and the 44 Magnum cartridge make an excellent combination for Metallic Silhouette Shooting and offer the big game hunter ample power for hunting deer, black bear, and even moose at close ranges.

With all powders tested throughout the range of bullets, accuracy was very good. However, best accuracy and uniformity were obtained using Winchester 296 and IMR 4227.

200 GRAIN BULLETS:

SECTIONAL DENSITY: .155
DIAMETER: .430"

#44100 HP/XTP
Ballistic Coefficient — .170
C.O.L. — 1.600"



POWDER	VELOCITY					
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps	1950 fps
Blue Dot	19.5 gr.	20.2 gr.	20.8 gr.			
2400	22.8 gr.	23.5 gr.	24.3 gr.			
H110	24.1 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.
WIN 296	25.3 gr.	26.0 gr.	26.7 gr.	27.4 gr.	28.1 gr.	28.8 gr.
IMR 4227	27.1 gr.	27.7 gr.	28.2 gr.			

See Ballistics Tables on pages 342-345, 425-426, Vol. II

240 GRAIN BULLETS:

SECTIONAL DENSITY: .185
DIAMETER: .430"

#44200 HP/XTP
Ballistic Coefficient — .205
C.O.L. — 1.610"



#4425 JTC-SIL
Ballistic Coefficient — .174
C.O.L. — 1.600"



POWDER	VELOCITY					
	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
Blue Dot	17.1 gr.	17.6 gr.	18.2 gr.	18.7 gr.		
2400	19.8 gr.	20.6 gr.	21.4 gr.	22.2 gr.		
H110			22.5 gr.	23.3 gr.	24.2 gr.	25.0 gr.
WIN 296	21.9 gr.	22.6 gr.	23.3 gr.	24.1 gr.	24.8 gr.	
IMR 4227	23.7 gr.	24.3 gr.	24.8 gr.	25.4 gr.		

See Ballistics Tables on pages 346-349, 349-352, 426-427, 427-428, Vol. II

 Indicates maximum load • use with caution

265 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.205**
.430"**#4300 FP****Ballistic Coefficient — .189**
C.O.L. — 1.610"

POWDER	VELOCITY					
	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
Blue Dot	15.1 gr.	15.6 gr.	16.1 gr.	16.7 gr.	17.2 gr.	
2400	18.4 gr.	19.0 gr.	19.7 gr.	20.4 gr.		
H110				20.8 gr.	21.6 gr.	22.3 gr.
WIN 296	19.7 gr.	20.5 gr.	21.2 gr.	21.9 gr.	22.6 gr.	
IMR 4227	20.7 gr.	21.3 gr.	22.0 gr.	22.6 gr.	23.3 gr.	24.0 gr.

*See Ballistics Tables on pages 207-208, Vol. II***300 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.232**
.430"**#44280 HP/XTP****Ballistic Coefficient — .245**
C.O.L. — 1.600"

POWDER	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
2400	14.5 gr.	15.1 gr.	15.7 gr.	16.3 gr.	16.9 gr.	17.5 gr.	
AA #9	14.8 gr.	15.5 gr.	16.2 gr.	16.8 gr.	17.5 gr.	18.2 gr.	
H110	16.4 gr.	17.0 gr.	17.6 gr.	18.1 gr.	18.7 gr.	19.3 gr.	19.9 gr.
H4227	17.0 gr.	17.5 gr.	18.0 gr.	18.5 gr.	19.1 gr.	19.6 gr.	
WIN 296	17.1 gr.	17.7 gr.	18.2 gr.	18.7 gr.	19.3 gr.	19.8 gr.	20.4 gr.

See Ballistics Tables on pages 352-353, 428-429, Vol. II Indicates maximum load • use with caution

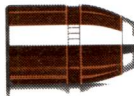
265 GRAIN BULLETS:

SECTIONAL DENSITY: .205
DIAMETER: .430"

#4300 FP

Ballistic Coefficient — .189

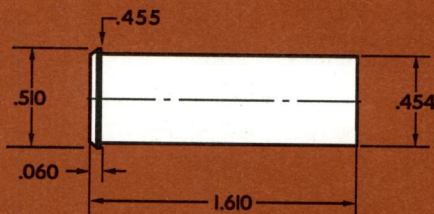
C.O.L. — 1.695"



POWDER	VELOCITY					
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
2400	17.2 gr.	17.9 gr.	18.7 gr.	19.4 gr.		
H110	18.2 gr.	18.8 gr.	19.4 gr.	20.0 gr.	20.6 gr.	
WIN 296	18.6 gr.	19.3 gr.	20.1 gr.	20.8 gr.	21.6 gr.	22.4 gr.
IMR 4227	19.9 gr.	20.7 gr.	21.4 gr.	22.2 gr.	22.9 gr.	

See Ballistics Tables on pages 207-208, Vol. II

 Indicates maximum load • use with caution



445 SUPER MAG

PISTOL: DAN WESSON
BARREL: 8", 1 in 18" TWIST
CASE: IHMSA
PRIMER: FEDERAL 155

BULLET DIAMETER: .430"
MAXIMUM C.O.L.: 1.965"
MAX. CASE LENGTH: 1.610"
CASE TRIM LENGTH: 1.600"

Knocking down the metal silhouettes at 200 meters requires considerable momentum. Elgin Gates designed the .445 Super Magnum to do exactly this. The cartridge is an elongated 44 Magnum nearly $\frac{3}{8}$ " longer than its parent. In spite of its name, it uses the same .430" bullets and propels them nearly 200 fps faster than the 44 Magnum.

The gun for this cartridge is immense and when mounted with a scope, weighs nearly as much as some ultra-light rifles. But, it is also nearly as effective up to moderate ranges. This is most effective with either of the 240 grain bullets, the 265 grain Flat Point or the 300 grain HP/XTP. There is considerable muzzle blast and recoil with this gun. It is not a pistol for the inexperienced shooter. Those who are willing to practice and become calloused to its recoil and noise will be rewarded with an accurate, extremely powerful handgun.

If silhouette shooting or handgun hunting is your sport, the 445 Super Magnum may be for you.

180 GRAIN BULLETS:

SECTIONAL DENSITY: .139
DIAMETER: .430"

#44050 HP/XTP
Ballistic Coefficient — .138
C.O.L. — 1.925"



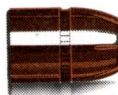
POWDER	VELOCITY					
	1400 fps	1500 fps	1600 fps	1650 fps	1700 fps	1750 fps
MP 5744	30.3 gr.	32.5 gr.	34.6 gr.	35.7 gr.	36.8 gr.	
H4227	31.3 gr.	33.0 gr.	34.8 gr.	35.7 gr.	36.6 gr.	
IMR 4227	33.1 gr.	34.7 gr.	36.3 gr.	37.1 gr.		
WIN 296	35.7 gr.	36.9 gr.	38.1 gr.	38.6 gr.		
WIN 680	38.3 gr.	39.5 gr.	40.8 gr.	41.4 gr.	42.0 gr.	42.6 gr.

See Ballistics Tables on pages 338-342, Vol. II

200 GRAIN BULLETS:

SECTIONAL DENSITY: .155
DIAMETER: .430"

#44100 HP/XTP
Ballistic Coefficient — .170
C.O.L. — 1.925"



POWDER	VELOCITY				
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps
MP 5744	29.0 gr.	30.8 gr.	32.5 gr.	34.3 gr.	
H4227	29.1 gr.	30.9 gr.	32.7 gr.	34.6 gr.	
IMR 4227	30.4 gr.	32.0 gr.	33.5 gr.	35.1 gr.	
WIN 296	31.9 gr.	33.8 gr.	35.6 gr.		
H110	32.6 gr.	34.2 gr.	35.8 gr.		
WIN 680	34.8 gr.	36.0 gr.	37.2 gr.	38.4 gr.	39.6 gr.

See Ballistics Tables on pages 342-345, 425-426, Vol. II

 Indicates maximum load • use with caution

240 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.185
.430"

#44200 HP/XTP

Ballistic Coefficient — .205
C.O.L. — 1.925"



#4425 JTC-SIL

Ballistic Coefficient — .174
C.O.L. — 1.925"



POWDER	VELOCITY				
	1200 fps	1300 fps	1400 fps	1500 fps	1600 fps
H4227	25.5 gr.	27.8 gr.	30.1 gr.		
MP 5744	26.7 gr.	28.5 gr.	30.4 gr.	32.2 gr.	
IMR 4227	26.4 gr.	28.6 gr.	30.8 gr.		
WIN 296	28.1 gr.	29.7 gr.	31.3 gr.	32.9 gr.	
H110	29.6 gr.	30.7 gr.	31.7 gr.	32.8 gr.	
WIN 680	30.8 gr.	32.3 gr.	33.7 gr.	35.2 gr.	36.6 gr.
AA 1680	33.2 gr.	34.9 gr.	36.6 gr.	38.3 gr.	40.1 gr.

See Ballistics Tables on pages 346-349, 349-352, 426-427, 427-428, Vol. II

265 GRAIN BULLETS:

SECTIONAL DENSITY:
DIAMETER:

.205
.430"

#4300 FP

Ballistic Coefficient — .189
C.O.L. — 1.965"



POWDER	VELOCITY					
	1100 fps	1200 fps	1300 fps	1350 fps	1400 fps	1450 fps
H4227	23.7 gr.	25.8 gr.	27.8 gr.	28.8 gr.		
MP 5744	25.0 gr.	26.9 gr.	28.7 gr.	29.6 gr.	30.6 gr.	
IMR 4227	26.1 gr.	27.5 gr.	28.9 gr.	29.6 gr.	30.3 gr.	
WIN 296	26.8 gr.	28.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	
H110	27.2 gr.	28.8 gr.	30.5 gr.	31.3 gr.	32.2 gr.	
WIN 680	28.8 gr.	30.2 gr.	31.7 gr.	32.4 gr.	33.1 gr.	33.8 gr.
AA 1680	30.4 gr.	32.3 gr.	34.1 gr.	35.0 gr.	35.9 gr.	36.8 gr.

See Ballistics Tables on pages 207-208, Vol. II

Indicates maximum load • use with caution

300 GRAIN BULLETS:

SECTIONAL DENSITY: .232
DIAMETER: .430"

#44280 HP/XTP
Ballistic Coefficient — .245
C.O.L. — 1.935"

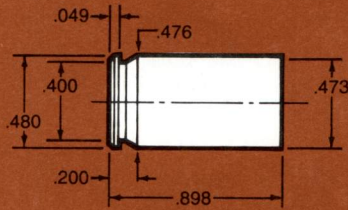


POWDER	VELOCITY				
	1100 fps	1200 fps	1300 fps	1350 fps	1400 fps
H4227	22.7 gr.	24.8 gr.	26.9 gr.		
WIN 296	24.4 gr.	26.0 gr.	27.7 gr.	28.5 gr.	29.4 gr.
IMR 4227	24.7 gr.	26.4 gr.	28.0 gr.		
H110	24.6 gr.	26.4 gr.	28.2 gr.	29.1 gr.	
MP 5744	24.9 gr.	26.6 gr.	28.4 gr.	29.3 gr.	
WIN 680	26.8 gr.	28.0 gr.	29.2 gr.	29.8 gr.	30.4 gr.
AA 1680	28.6 gr.	30.6 gr.	32.6 gr.	33.6 gr.	34.5 gr.

See Ballistics Tables on pages 352-353, 428-429, Vol. II



Indicates maximum load • use with caution



45 ACP

PISTOL: COLT GOV'T MODEL
BARREL: 5", 1 in 16" TWIST
CASE: HORNADY
PRIMER: FEDERAL 150

BULLET DIA.: .451"-.452"
MAXIMUM C.O.L. 1.275"
MAX. CASE LENGTH: .898"
CASE TRIM LENGTH: .893"

The 45 Automatic was adopted by the United States Ordnance Department in 1911, six years after its introduction by John M. Browning.

Because the 45 Auto is a powerful handgun cartridge, it requires practice to shoot well. However, it is probably the number one cartridge of pistol target shooters. Perhaps one of the reasons our military switched to the 9mm cartridge is its more manageable recoil. Control with the 45 Auto can be enhanced by shooting large numbers of plinking or target rounds at reduced velocities; the Hornady 185 grain Hollow Point and 5.3 grains of Bullseye make a good, accurate combination.

Hornady has eight 45 caliber bullets for the 45 Auto reloader: the 185 grain HP/XTP, the 185 grain Target, the 200 grain L-SWC, the 200 grain FMJ-C/T, the 200 grain L-C/T, the 230 grain LRN, the 230 grain Round Nose Full Metal Jacket, and the 230 grain Flat Point Full Metal Jacket.

In our 1911 Colt, Bullseye and Unique performed best with the lighter bullets. For target work, we recommend loadings at 800 fps for best accuracy. For the heavier 230 grain bullets, HS-6 and Unique display the best accuracy/velocity combinations. The 230 grain Flat Point proved to be the most accurate. Little or no crimp should be used, as the 45 Auto headspaces on the mouth of the case.

The 45 Auto is a versatile cartridge that can be used for self-defense, target shooting, plinking, and even hunting small game at close range.

185 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .451"

#45100 HP/XTP
Ballistic Coefficient — .139
C.O.L. — 1.230"



#4513 SWC
Ballistic Coefficient — .068
C.O.L. — 1.194"



POWDER	VELOCITY					
	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
Solo 1000	4.1 gr.	4.4 gr.	4.7 gr.	4.9 gr.		
Red Dot	4.0 gr.	4.5 gr.	4.8 gr.	5.1 gr.		
WIN WSL		4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.	
Bullseye	4.1 gr.	4.6 gr.	5.0 gr.	5.4 gr.		
AA #2	4.7 gr.	5.1 gr.	5.4 gr.	5.7 gr.		
Pearl Scot		5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.	
WIN 231		5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.	
Herco		6.0 gr.	6.3 gr.	6.6 gr.	6.9 gr.	
SR 4756	6.0 gr.	6.3 gr.	6.5 gr.	6.8 gr.	7.0 gr.	
AA #5		7.0 gr.	7.3 gr.	7.5 gr.	7.8 gr.	8.1 gr.
HS-6	7.8 gr.	8.2 gr.	8.5 gr.	8.9 gr.		
AA #7		9.4 gr.	9.9 gr.	10.3 gr.	10.7 gr.	11.2 gr.

See Ballistics Tables on pages 357-360, 360-363, Vol. II



Indicates maximum load • use with caution

200 GRAIN BULLETS:

SECTIONAL DENSITY: .140
DIAMETER: .451"

#4515 FMJ-C/T
Ballistic Coefficient — .115
C.O.L. — 1.245"



#45140 HP/XTP
Ballistic Coefficient — .151
C.O.L. — 1.240"



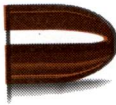
POWDER	VELOCITY				
	800 fps	850 fps	900 fps	950 fps	1000 fps
Solo1000	4.4 gr.	4.7 gr.			
Red Dot	4.5 gr.	4.8 gr.	5.1 gr.		
WIN WST	4.6 gr.	5.0 gr.			
WIN WSL	4.7 gr.	5.1 gr.	5.5 gr.		
Pearl Scot	5.4 gr.	5.6 gr.	5.8 gr.		
WIN 231	5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.	
Unique	5.6 gr.	5.9 gr.	6.2 gr.		
AA #5	6.9 gr.	7.2 gr.	7.5 gr.	7.8 gr.	8.1 gr.
HS-6	7.3 gr.	7.7 gr.	8.2 gr.	8.6 gr.	
AA #7	9.5 gr.	9.9 gr.	10.3 gr.	10.7 gr.	11.1 gr.

See Ballistics Tables on pages 363-366, Vol. II

230 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .451"

#4517 FMJ-RN
Ballistic Coefficient — .184
C.O.L. — 1.240"



#4518 FMJ-FP
Ballistic Coefficient — .168
C.O.L. — 1.200"



POWDER	VELOCITY				
	700 fps	750 fps	800 fps	850 fps	900 fps
Solo 1000	3.9 gr.	4.1 gr.	4.4 gr.		
WIN WSL	4.2 gr.	4.5 gr.	4.8 gr.	5.1 gr.	
Pearl Scot	4.7 gr.	4.9 gr.	5.1 gr.		
AA #2	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.	
Unique		5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.
Herco		5.5 gr.	5.8 gr.	6.1 gr.	
AA #5	6.0 gr.	6.2 gr.	6.5 gr.	6.8 gr.	7.0 gr.
Solo 1500	6.8 gr.	7.0 gr.	7.3 gr.	7.6 gr.	
HS-6		7.0 gr.	7.4 gr.	7.8 gr.	8.3 gr.
AA #7		8.6 gr.	9.1 gr.	9.6 gr.	10.0 gr.

See Ballistics Tables on pages 366-369, 369-371, Vol. II

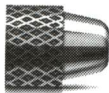


Indicates maximum load • use with caution

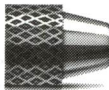
200 GRAIN BULLETS:

SECTIONAL DENSITY:	.140
DIAMETER:	.452"

#4526 SWC
Ballistic Coefficient — .070
C.O.L. — 1.200"



#4528 L-C/T
Ballistic Coefficient — .081
C.O.L. — 1.220"



45 ACP

POWDER	VELOCITY				
	800 fps	850 fps	900 fps	950 fps	1000 fps
Solo 1000	4.4 gr.	4.7 gr.			
Red Dot	4.5 gr.	4.8 gr.	5.1 gr.		
WIN WST	4.6 gr.	5.0 gr.			
WIN WSL	4.7 gr.	5.1 gr.	5.5 gr.		
Pearl Scot	5.4 gr.	5.6 gr.	5.8 gr.		
WIN 231	5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.	
Unique	5.6 gr.	5.9 gr.	6.2 gr.		
AA #5	6.9 gr.	7.2 gr.	7.5 gr.	7.8 gr.	8.1 gr.
HS-6	7.3 gr.	7.7 gr.	8.2 gr.	8.6 gr.	
AA #7	9.5 gr.	9.9 gr.	10.3 gr.	10.7 gr.	11.1 gr.

See Ballistics Tables on page 378-379, 379, Vol. II

Indicates maximum load • use with caution

230 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .452"

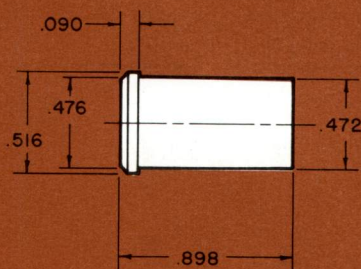
#4530 LRN
Ballistic Coefficient — .207
C.O.L. — 1.250"



POWDER	700 fps	750 fps	800 fps	850 fps	900 fps
Solo 1000	3.9 gr.	4.1 gr.	4.4 gr.		
WIN WSL	4.2 gr.	4.5 gr.	4.8 gr.	5.1 gr.	
Pearl Scot	4.7 gr.	4.9 gr.	5.1 gr.		
AA #2	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.	
Unique		5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.
Herco		5.5 gr.	5.8 gr.	6.1 gr.	
AA #5	6.0 gr.	6.2 gr.	6.5 gr.	6.8 gr.	7.0 gr.
Solo 1500	6.8 gr.	7.0 gr.	7.3 gr.	7.6 gr.	
HS-6		7.0 gr.	7.4 gr.	7.8 gr.	8.3 gr.
AA #7		8.6 gr.	9.1 gr.	9.6 gr.	10.0 gr.

See Ballistics Tables on pages 380, Vol. II

 Indicates maximum load • use with caution



45 AUTO RIM

PISTOL: 45 COLT MODEL 1917
BARREL: 5½", 1 in 16" TWIST
CASE: REMINGTON
PRIMER: FEDERAL 150

BULLET DIAMETER: .451"
MAXIMUM C.O.L.: 1.220"
MAX. CASE LENGTH: .898"
CASE TRIM LENGTH: .888"

America entered World War I without sufficient 1911 45 ACP pistols for its troops. To answer this need for side arms, both Smith and Wesson and Colt produced revolvers chambered for the 45 ACP. To facilitate extraction, a three shot "half-moon" clip was used to hold the rimless 45 ACP cartridge. Revolvers from both companies were made in quantity during World War I, and thousands of such 45 Auto revolvers were sold to civilians after that conflict. As with all older military pistols, careful inspection of the firearm by a knowledgeable gunsmith is highly recommended.

In 1920 the Peters Cartridge Company produced a rimmed version of the service cartridge — the 45 Auto Rim — to eliminate the need for the pesky half-moon clips. Remington still loads this round in factory ammunition, and the 230 gr. lead bullet it uses will develop a muzzle velocity of 810 fps (5½" barrel).

The 45 caliber 185 gr. HP/XTP (.451" diameter) in the Hornady bullet line is an outstanding choice for the 45 Auto Rim as it is for the 45 ACP. Jacketed Hornady pistol bullets prevent leading at top obtainable velocities and expansion is excellent. Since this cartridge headspaces on the rim, a light crimp to hold bullets in place is okay.

185 GRAIN BULLETS:

SECTIONAL DENSITY: .130
DIAMETER: .451"

#45100 HP/XTP
Ballistic Coefficient — .139
C.O.L. — 1.220"



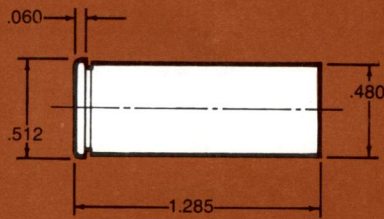
#4513 SWC
Ballistic Coefficient — .068
C.O.L. — 1.220"



POWDER	VELOCITY					
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
Bullseye	4.6 gr.	4.9 gr.	5.3 gr.	5.7 gr.	6.1 gr.	6.4 gr.
700X	4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.	5.9 gr.	6.2 gr.
Red Dot	4.9 gr.	5.2 gr.	5.5 gr.	5.8 gr.	6.2 gr.	6.5 gr.
Unique	6.3 gr.	6.7 gr.	7.1 gr.	7.4 gr.	7.8 gr.	8.2 gr.

See Ballistics Tables on pages 357-360, 360-363, Vol. II

 Indicates maximum load • use with caution



45 LONG COLT

PISTOL: RUGER BISLEY BLACKHAWK	BULLET DIA.: .451"-.452"
BARREL: 7½", 1 in 16" TWIST	MAXIMUM C.O.L.: 1.600"
CASE: WINCHESTER	MAX. CASE LENGTH: 1.285"
PRIMER: WINCHESTER WLP	CASE TRIM LENGTH: 1.275"

This century old cartridge was originally chambered in Colt's famous Peacemaker, and enjoyed an illustrious career in the Old West. It declined in favor as double action revolvers came to dominate the handgun scene, but has managed to recapture shooter interest as single actions have staged a comeback. It is also currently chambered in Winchester M94 and Marlin 1894S lever actions.

The 45 Colt (or sometimes the 45 Long Colt) cartridge has been loaded since 1873 with various amounts of black and smokeless powders and bullets of different weights and designs.

Shooting jacketed Hornady pistol bullets in the 45 Colt, we were able to reach (and safely!) 950 fps with our 250 gr. HP/XTP and Accurate Arms excellent #9 pistol powder. At such a velocity the big Long Colt slug carries 500 ft.-lbs. of muzzle energy, substantial performance from a cartridge so ancient. We definitely do not recommend a steady diet of such steamy loads in most single actions, for they do tend to loosen things up inside. And of course we never recommend that any shooter with any firearm start with the maximum listed load; top loads must be worked up carefully to insure that they'll be safe with the components and firearm the shooter is using.

This data can be used in older Colts in good condition and replica reproduction models from other manufacturers.

230 GRAIN BULLETS:

SECTIONAL DENSITY: .162
DIAMETER: .451"

#4517 FMJ-RN
Ballistic Coefficient — .184
C.O.L. — 1.600"



#4518 FMJ-FP
Ballistic Coefficient — .168
C.O.L. — 1.550"



POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
700-X	5.5 gr.	6.0 gr.	6.5 gr.			
Bullseye	6.2 gr.	6.5 gr.	6.8 gr.			
Unique	7.5 gr.	7.8 gr.	8.2 gr.	8.5 gr.		
2400	13.2 gr.	13.5 gr.	13.8 gr.	14.2 gr.	14.6 gr.	14.9 gr.
AA #9		14.3 gr.	14.8 gr.	15.3 gr.	15.8 gr.	16.3 gr.
IMR 4227	16.5 gr.	17.0 gr.	17.6 gr.	18.1 gr.	18.7 gr.	
MP 5744		16.1 gr.	17.5 gr.	18.7 gr.		

See Ballistics Tables on pages 366-369, 369-371, 429-430, 430-431, Vol. II



Indicates maximum load • use with caution

250 GRAIN BULLETS:

SECTIONAL DENSITY: .175
DIAMETER: .452"

#45200 HP/XTP

Ballistic Coefficient — .146
C.O.L. — 1.595"



POWDER	VELOCITY						
	650 fps	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
700-X	5.3 gr.	5.5 gr.	5.7 gr.				
Bullseye	5.2 gr.	5.6 gr.	6.0 gr.				
Unique		6.3 gr.	7.0 gr.	7.7 gr.			
2400	12.1 gr.	12.4 gr.	12.7 gr.	13.0 gr.	13.3 gr.		
AA #9				13.3 gr.	13.9 gr.	14.5 gr.	15.1 gr.
IMR 4227		14.9 gr.	15.6 gr.	16.4 gr.	17.1 gr.		
MP 5744			15.4 gr.	16.4 gr.	17.4 gr.	18.4 gr.	

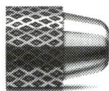
See Ballistics Tables on pages 372-375, 431-432, Vol. II

200 GRAIN BULLETS:

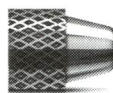
SECTIONAL DENSITY: .140
DIAMETER: .452"

#4526 SWC

Ballistic Coefficient — .070
C.O.L. — 1.595"

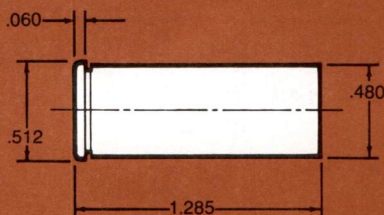
**#4528 L-C/T**

Ballistic Coefficient — .081
C.O.L. — 1.595"



POWDER	VELOCITY					
	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps
700-X	5.2 gr.	5.8 gr.	6.4 gr.			
Bullseye	5.8 gr.	6.2 gr.	6.6 gr.	7.0 gr.		
Red Dot	5.2 gr.	5.9 gr.	6.6 gr.			
WIN 231	6.8 gr.	7.2 gr.	7.6 gr.	7.9 gr.		
Unique	7.3 gr.	7.7 gr.	8.1 gr.	8.5 gr.		
2400	13.0 gr.	13.5 gr.	14.1 gr.	14.6 gr.		
AA #9				15.0 gr.	15.7 gr.	16.4 gr.

See Ballistics Tables on pages 378-379, 379, Vol. II



45 LONG COLT (RUGER & T/C ONLY)

PISTOL: T/C CONTENDER
BARREL: 10", 1 in 22" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLP

BULLET DIAMETER: .452"
MAXIMUM C.O.L.: 1.600"
MAX. CASE LENGTH: 1.285"
CASE TRIM LENGTH: 1.275"

The following data is to be used only in the T/C or the Ruger Blackhawk. The pressures of the loading data that follow are above acceptable and safe limits permissible in earlier 45 Colt revolvers or their replicas. *Therefore this data should not be used in these firearms.* However, it probably can safely be used in the Marlin 1894S or the Winchester Model 94 rifles produced in 45 Colt.

The loads that follow are for the handgun hunter or metallic silhouette shooter. If loads are desired for the 200 grain LSWC, the data for the standard 45 Long Colt should be used. 2400 and IMR 4227 produced the best results with our firearm. Note: When loading for the Ruger Blackhawk, a heavy crimp is necessary to prevent bullets from sliding out of the case during recoil.

250 GRAIN BULLETS:

SECTIONAL DENSITY: .175
DIAMETER: .452"

#45200 HP/XTP

Ballistic Coefficient — .146
C.O.L. — 1.595"



POWDER	VELOCITY						
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
AA #9	14.8 gr.	15.4 gr.	16.0 gr.	16.6 gr.	17.2 gr.	17.8 gr.	
2400	14.9 gr.	15.5 gr.	16.2 gr.	16.8 gr.	17.5 gr.		
H4227	17.2 gr.	17.9 gr.	18.6 gr.	19.3 gr.	20.0 gr.	20.7 gr.	21.4 gr.
MP 5744	19.0 gr.	19.9 gr.	20.8 gr.	21.7 gr.	22.6 gr.		
IMR 4227	19.7 gr.	20.6 gr.	21.5 gr.	22.4 gr.	23.3 gr.	24.2 gr.	

See Ballistics Tables on pages 372-375, 431-432, Vol. II

300 GRAIN BULLETS:

SECTIONAL DENSITY: .210
DIAMETER: .452"

#45230 HP/XTP

Ballistic Coefficient — .180
C.O.L. — 1.585"

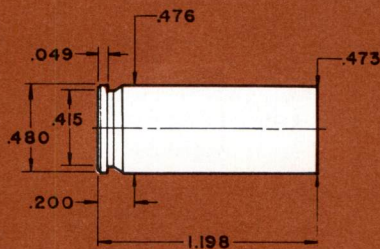


POWDER	VELOCITY						
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
2400	14.3 gr.	14.8 gr.	15.4 gr.	15.9 gr.			
AA #9	13.6 gr.	14.4 gr.	15.2 gr.	16.0 gr.			
H4227	15.7 gr.	16.4 gr.	17.2 gr.	18.0 gr.	18.7 gr.		
WIN 296			17.3 gr.	18.3 gr.	19.3 gr.	20.3 gr.	21.3 gr.
IMR 4227	17.9 gr.	18.7 gr.	19.5 gr.	20.2 gr.	21.0 gr.		
MP 5744	18.4 gr.	19.1 gr.	19.7 gr.	20.4 gr.	21.0 gr.		

See Ballistics Tables on pages 375-378, 432-433, Vol. II

45 LONG COLT (RUGER & T/C ONLY)

Indicates maximum load • use with caution



45 WINCHESTER MAGNUM

PISTOL: T/C CONTENDER
BARREL: 14", 1 in 16" TWIST
CASE: WINCHESTER
PRIMER: WINCHESTER WLP

BULLET DIA.: .451"-.452"
MAXIMUM C.O.L.: 1.510"
MAX. CASE LENGTH: 1.198"
CASE TRIM LENGTH: 1.188"

The 45 Winchester Magnum was one of a pair of new cartridges developed in the late seventies for the Swedish designed Wildey pistol. The other cartridge, the 9mm Winchester Magnum, and the pistol were short lived and rarely seen today. The 45 Win. Mag. mostly encountered in the Thompson/Center Contender and the L.A.R. Grizzly semi-auto pistol. The cartridge is essentially an elongated .45 ACP, preventing chambering in firearms for the .45 ACP. The 45 Win Mag is loaded to much higher pressure, propelling the factory loaded 230 grain FMJ-RN to 1350 fps with nearly twice the energy of the same bullet in the 45 ACP.

This cartridge has found acceptance in metallic silhouette shooters and big game handgun hunters. The new Hornady 250 grain HP/XTP is an excellent choice for either hunting or silhouette shooting. Blue Dot and HS-7 gave us the best results in our test gun.

185 GRAIN BULLETS:

SECTIONAL DENSITY:	.130
DIAMETER:	.451"

#45100 HP/XTP
Ballistic Coefficient — .139
C.O.L. — 1.510"



#4513 SWC
Ballistic Coefficient — .068
C.O.L. — 1.510"



POWDER	VELOCITY				
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps
Unique	13.8 gr.	14.5 gr.	15.1 gr.		
Blue Dot	17.9 gr.	18.8 gr.	19.6 gr.	20.5 gr.	21.3 gr.
HS-7	19.5 gr.	20.3 gr.	21.1 gr.	21.8 gr.	

See Ballistics Tables on pages 357-360, 360-363, Vol. II

230 GRAIN BULLETS:

SECTIONAL DENSITY:	.162
DIAMETER:	.451"

#4517 FMJ-RN
Ballistic Coefficient — .184
C.O.L. — 1.500"



#4518 FMJ-FP
Ballistic Coefficient — .168
C.O.L. — 1.500"



POWDER	VELOCITY					
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps
Unique	11.6 gr.	12.1 gr.	12.6 gr.	13.1 gr.		
Blue Dot	15.0 gr.	15.5 gr.	16.0 gr.	16.5 gr.	17.0 gr.	17.5 gr.
HS-7	16.1 gr.	16.7 gr.	17.4 gr.	18.0 gr.		
2400	18.7 gr.	19.4 gr.	20.2 gr.	21.0 gr.	21.8 gr.	
IMR 4227	21.4 gr.	22.6 gr.	23.8 gr.	25.0 gr.		

See Ballistics Tables on pages 366-369, 369-371, 429-430, 430-431, Vol. II

 Indicates maximum load • use with caution

250 GRAIN BULLETS:

SECTIONAL DENSITY: .175
DIAMETER: .452"

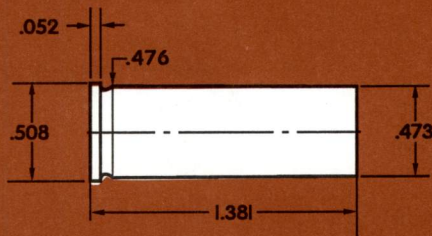
#45200 HP/XTP
Ballistic Coefficient — .146
C.O.L. — 1.480"



POWDER	VELOCITY					
	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
Unique	11.0 gr.	11.4 gr.	11.9 gr.			
Blue Dot	14.4 gr.	14.9 gr.	15.3 gr.	15.8 gr.	16.3 gr.	16.8 gr.
HS-7	15.6 gr.	16.2 gr.	16.7 gr.	17.3 gr.		
2400	17.8 gr.	18.5 gr.	19.3 gr.	20.1 gr.		
WIN 296	19.2 gr.	20.2 gr.	21.2 gr.	22.2 gr.	23.2 gr.	
IMR 4227	20.3 gr.	21.3 gr.	22.2 gr.	23.2 gr.	24.2 gr.	

See Ballistics Tables on pages 372-375, 431-432, Vol. II

 Indicates maximum load • use with caution



454 CASULL

PISTOL: FREEDOM ARMS
BARREL: 7½", 1 in 24" TWIST
CASE: FREEDOM ARMS
PRIMER: FEDERAL 205

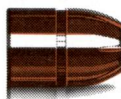
BULLET DIAMETER: .452"
MAXIMUM C.O.L.: 1.770"
MAX. CASE LENGTH: 1.390"
CASE TRIM LENGTH: 1.380"

The sports of handgun hunting and metallic silhouette shooting stimulated the production of increasingly powerful pistols. Dick Casull concocted one of, if not the most powerful production repeating handguns in existence. The pistol is a superb five shot unfluted cylinder revolver manufactured from stainless steel by Freedom Arms. It is designed especially for the .454 Casull cartridge and its operating pressures. Other firearms chambered for this should, perhaps, be used with caution.

The cartridge is similar to the 45 Long Colt, although thicker in the head, made for small rifle primers, and longer, preventing chambering of the .454 Casull in other firearms. In spite of its name, this cartridge uses bullets of .452" diameter.

The 454 Casull is at its best with heavier bullets, either for their momentum or for their penetrating power on game animals. Both bullets listed are excellent for hunting.

As with any high intensity cartridge, throat erosion and flame cutting are possibilities. Slightly reduced loads (i.e., 150 fps less than maximum) are beneficial in reducing these problems.

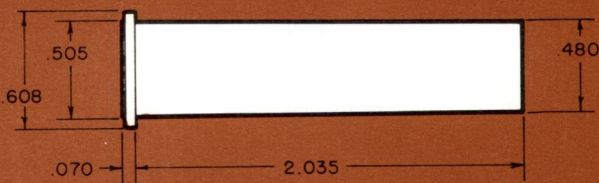
250 GRAIN BULLETS:**SECTIONAL DENSITY:**
DIAMETER:**.175**
.452"**#45200 HP/XTP**
Ballistic Coefficient — .146
C.O.L. — 1.685"

POWDER	VELOCITY							
	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps	1800 fps
2400	24.5 gr.	25.3 gr.	26.1 gr.	26.8 gr.	27.6 gr.	28.4 gr.		
AA #9	25.7 gr.	26.4 gr.	27.0 gr.	27.7 gr.	28.4 gr.	29.1 gr.	29.8 gr.	30.5 gr.
H4227	27.3 gr.	28.0 gr.	28.7 gr.	29.4 gr.				
MP 5744	29.4 gr.	30.2 gr.	31.1 gr.	31.9 gr.				
H110	30.0 gr.	30.5 gr.	31.1 gr.	31.7 gr.	32.2 gr.	32.8 gr.	33.4 gr.	33.9 gr.
WIN 296	30.0 gr.	30.6 gr.	31.1 gr.	31.7 gr.	32.3 gr.	32.9 gr.	33.5 gr.	33.9 gr.

*See Ballistics Tables on pages 372-375, 431-432, Vol. II***300 GRAIN BULLETS:****SECTIONAL DENSITY:**
DIAMETER:**.210**
.452"**#45230 HP/XTP**
Ballistic Coefficient — .180
C.O.L. — 1.770"

POWDER	VELOCITY						
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps
2400	21.6 gr.	22.3 gr.	23.1 gr.	23.8 gr.	24.6 gr.	25.3 gr.	26.1 gr.
AA #9			23.0 gr.	23.9 gr.	24.8 gr.	25.7 gr.	26.6 gr.
H4227	24.6 gr.	25.3 gr.	26.0 gr.	26.7 gr.	27.4 gr.	28.1 gr.	
IMR 4227	26.1 gr.	26.7 gr.	27.2 gr.	27.8 gr.	28.4 gr.		
WIN 296	26.4 gr.	27.1 gr.	27.9 gr.	28.6 gr.	29.3 gr.	30.1 gr.	30.8 gr.
MP 5744	26.3 gr.	27.0 gr.	27.8 gr.	28.6 gr.	29.4 gr.		
H110	26.5 gr.	27.3 gr.	28.1 gr.	28.9 gr.	29.7 gr.	30.5 gr.	31.3 gr.

See Ballistics Tables on pages 375-378, 432-433, Vol. II*Indicates maximum load • use with caution*



45-70 (T/C PISTOL)

PISTOL: T/C CONTENDER
BARRELL: 16", 1 in 14" TWIST
CASE: WINCHESTER
PRIMER: FEDERAL 210

BULLET DIAMETER: .458"
MAXIMUM C.O.L.: 2.555"
MAX. CASE LENGTH: 2.105"
CASE TRIM LENGTH: 2.095"

The following data was developed in a Thompson/Center Contender pistol.

The 45-70 cartridge was the official government military caliber in the 1880's and 90's. New firearms, new cartridges, and smokeless powders led to the decline of the 45-70. However, a loyal group of hunters and woodsmen kept this effective cartridge alive.

In the 1980's the 45-70 was revived. New firearms (such as the Ruger No. 1), new loads (high velocity 300 grain hollow points) and fresh shooters brought the cartridge back from obscurity. In 1990 Thompson/Center introduced their Contender in 45-70. It should prove to be an effective combination in the field or possibly on the silhouette range.

Data is listed for the 300 grain Hollow Point and the 350 grain Round Nose. Due to severe recoil and wear and tear on both the shooter and the firearm, data is not listed for the 500 grain bullet. The 300 grain Hollow Point is probably the best choice for deer sized game. The 350 grain bullet has better penetrating ability and would be a better choice for larger, heavier game.

H322 powder performed best in our tests.

300 GRAIN BULLETS:

SECTIONAL DENSITY: .204
DIAMETER: .458"

#4500 HP
Ballistic Coefficiency — .197
C.O.L. — 2.540"



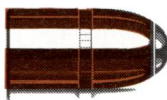
POWDER	VELOCITY				
	1500 fps	1600 fps	1700 fps	1750 fps	1800 fps
SR 4759	28.1 gr.	30.2 gr.	32.4 gr.		
IMR 4227	31.3 gr.	33.6 gr.	35.8 gr.	37.0 gr.	
IMR 4198	36.0 gr.	39.3 gr.	42.6 gr.	44.2 gr.	45.9 gr.
RL-7	39.1 gr.	41.9 gr.	44.7 gr.	46.2 gr.	47.6 gr.
H4198	39.3 gr.	42.6 gr.	46.0 gr.		
H322	44.0 gr.	47.5 gr.	51.0 gr.	52.7 gr.	54.7 gr.

See Ballistics Tables on pages 209-210, Vol. II

350 GRAIN BULLETS:

SECTIONAL DENSITY: .204
DIAMETER: .458"

#4502 RN
Ballistic Coefficiency — .189
C.O.L. — 2.555"



POWDER	VELOCITY				
	1400 fps	1500 fps	1600 fps	1650 fps	1700 fps
IMR 4198	32.7 gr.	35.9 gr.	39.1 gr.	40.7 gr.	42.3 gr.
RL-7	33.7 gr.	36.7 gr.	39.7 gr.	41.2 gr.	42.7 gr.
H4198	34.9 gr.	37.5 gr.	40.1 gr.	41.4 gr.	
H322	38.8 gr.	41.9 gr.	45.1 gr.	46.7 gr.	48.3 gr.
Scot 3032	42.3 gr.	45.9 gr.	49.5 gr.	51.2 gr.	53.0 gr.

See Ballistics Tables on pages 210-212, Vol. II

 Indicates maximum load • use with caution

