Lyman

RELOADING HANDBOOK

- FOR RIFLE, PISTOL, SHOTSHELL AND MUZZLE LOADING
- NEW, ENLARGED LOADING DATA SECTION
- NEW, UP-TO-DATE REFERENCE SECTION

PRESSURE POWDERS
PRIMERS BULLETS
CASES ACCURACY

44th EDITION

How to use your NEW Lyman HANDBOOK

From cover to cover, your 44th edition of the Lyman Handbook is ALL NEW. Almost double the size of any previous edition, it is completely different, and far more thorough in its coverage of the latest reloading procedures and data. We believe you will find it the most authoritative handbook available — and the easiest to use and comprehend.

For quick location of subject matter, each section is color coded and finger tabbed (see right). The new Reference section contains information on pressures, powders, primers, etc., all important for a sound knowledge of reloading. Data sections have been enlarged and all data has been retested to insure its accuracy. At the beginning of each Data section, a preamble explains how the data should be used.

We labored long and hard to make this 44th edition the true "bible" of reloading. While we believe we accomplished this, we hasten to acknowledge the valuable assistance which we received from many able people from the following firms, and for the use of their products in our research: Du Pont Powder Co., Hercules Powder Co., Remington Arms Co., Winchester-Western, Marlin Firearms Co., Weatherby, Inc., Savage Arms, O. F. Mossberg & Sons Inc., Smith & Wesson, Colt Firearms, Ed Agramonte Gun Collection, International Guns, Inc., Norma-Precision, Sierra Bullets, Inc., Alcan, Inc.

RIFLE

Blue section covers rifle cartridge reloading and rifle data.

PISTOL

Green section covers pistol cartridge reloading and pistol data.

SHOTSHELLS

Yellow section covers shotshell reloading and data, plus additional information pertinent to shotshell reloading.

MUZZLE LOADING

Black section covers the loading, use and care of modern "replica" firearms.

REFERENCE

White section should be read in conjunction with all other sections.

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RIFLE DATA (Continued)

RIFLE DATA (Continued)

RELOADING PISTOL CARTRIDGES

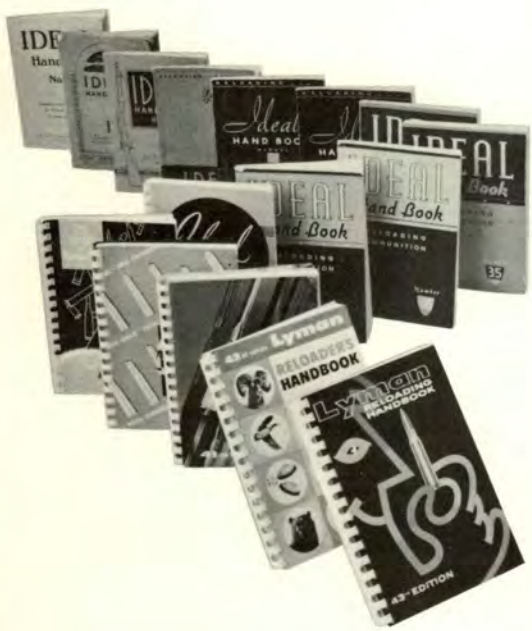
PISTOL DATA

Lyman

since 1878

The late William Lyman founded the Lyman Gun Sight Corporation in 1878 . . . nearly a century ago. In the beginning, the company's only product was the then revolutionary tang sight for rifles. As the business grew and prospered over the years, "Uncle" Will Lyman added many new products to the line, personally guaranteeing the quality of each one as it came along, and always maintaining a sincere concern for customer service and satisfaction. To him, his customers were his friends.

Today, there are several hundred products listed in the Lyman catalog: A complete line of Metallic and Telescopic Sights; Shotgun Chokes; Reloading and bullet casting equipment. Although Will Lyman's original product, the tang sight, is no longer being made, his insistence on quality and service has become an honored tradition . . . . . carried on through three generations of the Lyman family.



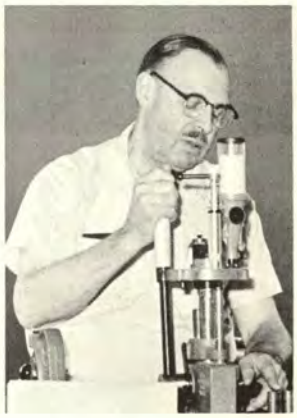
Over 40 Years of Reloading . . .

Lyman has over forty years experience in reloading dating back to 1925 when the Ideal Reloading Tool Company was purchased from John Barlow. Your present 44th Reloading Handbook is actually a continuation of Mr. Barlow's original Ideal Handbook which was the first reloading guide published in this country.

LYMAN Technical Staff

Ed Matunas

Charlie Norton



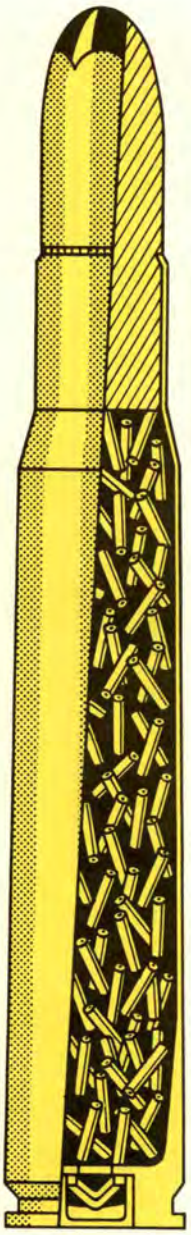
Lysle Kilbourn

Times have changed since Will Lyman answered each day's correspondence. The three people who comprise the Lyman technical staff . . . . . Ed Matunas, Charlie "Red" Norton and Lysle Kilbourn . . . . . now handle a daily bombardment of technical mail. These men competently carry on the tradition of friendly personal service to our customers. They analyze and offer solutions to reloading problems for shooters the world over. If you have a reloading problem with which you need assistance, feel free to write to one of these men.

Blue Trail Range

The Lyman family interest in shooting extends beyond the business profit motive. Connecticut is distinctive in having the Blue Trail Rifle Range — built by the Lyman Gun Sight Corporation. Located in Wallingford, an easy two hour drive from New York, or Boston, the Blue Trail Rifle Range serves all of Southern New England and New York for individual practice and tournament competitions.

Why Reload Cartridges?



Here's a factory 30/06 It will cost you 25¢

You can reload the same shell for only 8¢ . . . . . but that's not the whole story . . .

Economy, of course, is an important reason for reloading. A savings of 17 cents on every round reloaded is not to be sneezed at. However, there are further rewards for the do-it-yourself reloader. In fact, most reloaders don't pocket the 17 cents. Instead they reinvest it in additional reloading for more pleasurable, more skillful, more knowledgeable shooting.

Reloading ties in naturally with the sport of shooting and makes it more fun. Reloading is a fascinating hobby which widens the scope of the sport for you. For example, by varying the loads in your cartridges, you can use your deer rifle on a greater variety of game. This gives you more opportunities to hunt throughout the year, and it supplies you with plenty of inexpensive ammunition to boot. The man who fires on targets and varmints all summer is apt to have a sharp eye come deer season. So increased shooting versatility is another advantage enjoyed by reloaders.

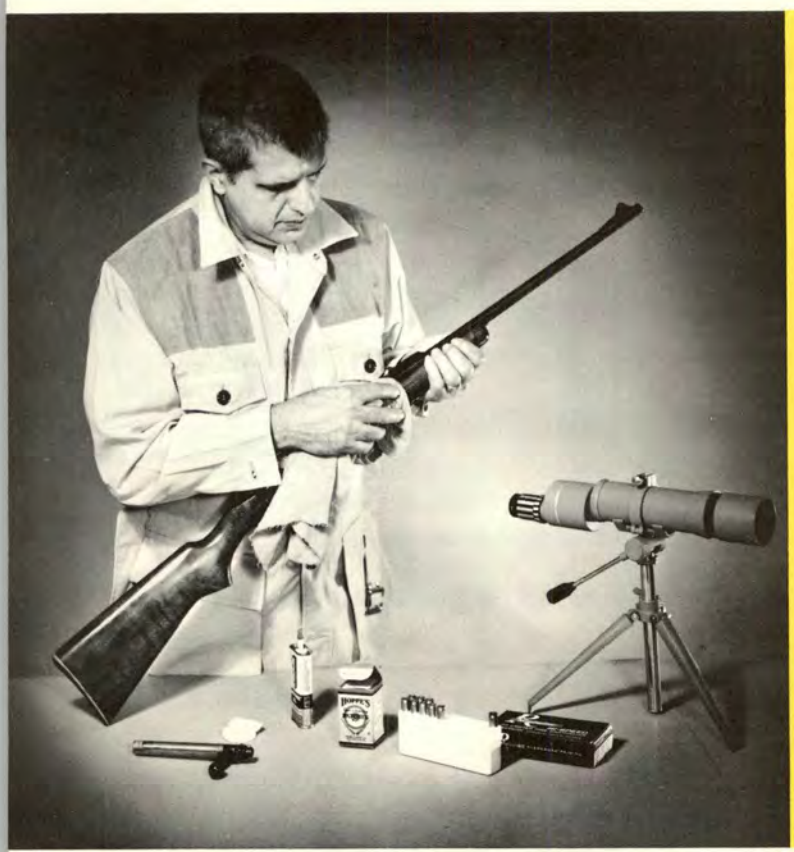
Many men reload for the sheer joy of it . . . for the pride of accomplishment it gives them. Just a few well learned basics of reloading procedures can start you off. It provides sport for every shooting enthusiast: from the casual hunter to the serious bench rest shooter. This is a hobby which you can keep simple, or you can pursue it with all the seriousness of a ballistics engineer. You can start by making good ammo for your trusty old thirty-thirty and stop there. Or, you can go on and on — 'til you rank with the professionals. The choice is yours, and it's fun all the way!

P.S. Many shooters would reload, even if it cost MORE.

HOW SAFE . . . . . HOW EASY is Reloading?

Is reloading safe? Difficult? Can I do it? These are questions that every novice asks.

Men who are now accomplished reloaders may have forgotten their first fumbling attempts at reloading their shells. They were uncertain when they began, as you may be now. Until you have actually reloaded and fired your first cartridge, it is difficult to appreciate how amazingly simple it is. Reloading requires no genius — just mature thinking and common sense. And these are simply the same qualities that are necessary for safe gun handling. Therefore, any qualified shooter can easily and safely reload his own cartridges.



Any qualified shooter can reload his own cartridges.

The novice reloader may have a natural fear of gun powder. He is concerned with the possible dangers of handling and loading the modern smokeless powders. So let's take a look at these powders and find out whether or not such fears are justified.

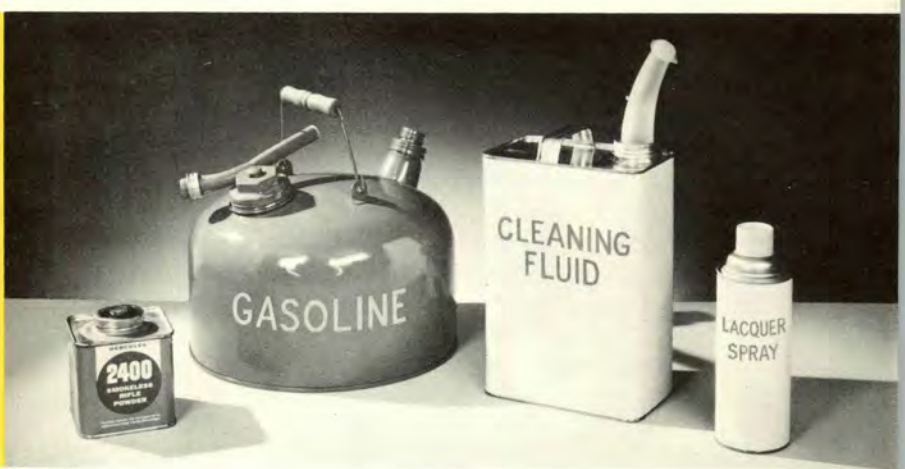
First, you select a powder and charge which are suitable for your caliber and purpose. This information is clearly listed in the Data Section of this Handbook. Once you have as-

certained the correct powder for your requirements, you will have no difficulty in identifying it in your dealer's store. All commercially available powders are sold in factory sealed containers with the identifying name or number clearly printed on the label. This is your assurance that you are purchasing the exact powder that you specify. The sealed can is your assurance that the contents have not been tampered with.

The reloader purchases powder in factory sealed and clearly labeled canisters.

Reloading powders are classified as propellants, not explosives. These powders when properly used, will burn when ignited, but they will not explode. Many ordinary liquids with which you are familiar, such as: gasoline, benzine, naphtha, lacquer, and some paints, require far more careful handling than do the modern smokeless powders. Combustible fumes released by the liquids are quite easily ignited. Powders, however, require direct and positive ignition. All that is required for complete safety is, reasonable care, such as not smoking when loading.

Of these four items, the can of rifle powder is the safest to handle and store.



As modern powders are easily identified and safe to handle, the only other concern to the reloader is to determine accurately the proper charge. Here you depend on the accuracy of your powder scale. Today's reloading scales, such as the Lyman-Ohaus D-5, are designed specifically for the weighing of powders. They are guaranteed accurate to one-tenth of a grain which is more than adequate for your most demanding reloading requirement.

Modern powder scales are highly accurate. The Lyman-Ohaus scale shown here is guaranteed accurate to one-tenth of a grain.

The actual mechanics of reloading are fully explained in the "How To Reload" chapter. They consist of six basic procedures which, as you will find upon reading the chapter, are easily understood and simple to learn. If you will follow these reloading instructions, you will quickly grasp the fundamentals of this interesting hobby, and YOU CAN START RIGHT IN MAKING YOUR OWN CARTRIDGES.

After a little reloading experience, your interest and confidence in this rewarding sport will probably increase, and you'll want to become more expert. You'll want to try varying the loads for your rifle . . . experiment for optimum shooting accuracy . . . explore various reloading theories and techniques . . . savor all the pleasures enjoyed by the oldtimers. If so, we have provided you with your "homework" in the reference section of the Handbook. By studying it you will soon acquire a sound knowledge of the subject.

One last thought. Do not be scared off by any technical jargon you encounter. Every sport has its own language and reloading is no different. You'll be talking the lingo in no time. If you should run into an unfamiliar word, check the glossary section in back of Handbook.

Reloading Rifle Cartridges

This chapter is devoted to the basic mechanics of reloading a rifle cartridge. We urge the beginner to read it carefully and to also read the preamble to his data section before attempting to reload. The preamble, located at the beginning of each data section is intended to help you interpret the data and insure its correct use.

CHOOSING YOUR TOOLS

Like most hobbyists, the average reloader eventually accumulates an assortment of tools and accessories which make reloading easier, faster and more professional. The addition of new items to his reloading bench give him a pride of ownership equaled only by the photography bug and the home craftsman. All the beginner needs, however, are a few basic tools. But he should make sure that the tools are of good quality so that they will last him in future reloading activities.

For the instructional text and illustrations in this section, we have selected the tools which we believe are best for the newcomer to rifle cartridge reloading. These few basic tools are easy to operate. They will last for a lifetime of reloading, and they will always be useful regardless of how advanced your hobby may become.

C-FRAME RELOADING PRESS
A strong reloading press is required to supply the necessary leverage. Pictured is the Lyman Spartan*.

RAM, SHELL HOLDER & PRIMING ARM
These items are required to complete your press. Items shown are Lyman Spartan*.

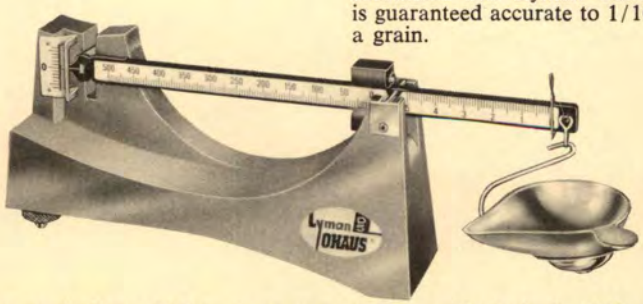
POWDER FUNNEL

CHAMFERING REAMER

SIZING LUBRICANT

RELOADING DIE SET
Quality reloading dies are a must. The set shown here is Lyman All-American*.

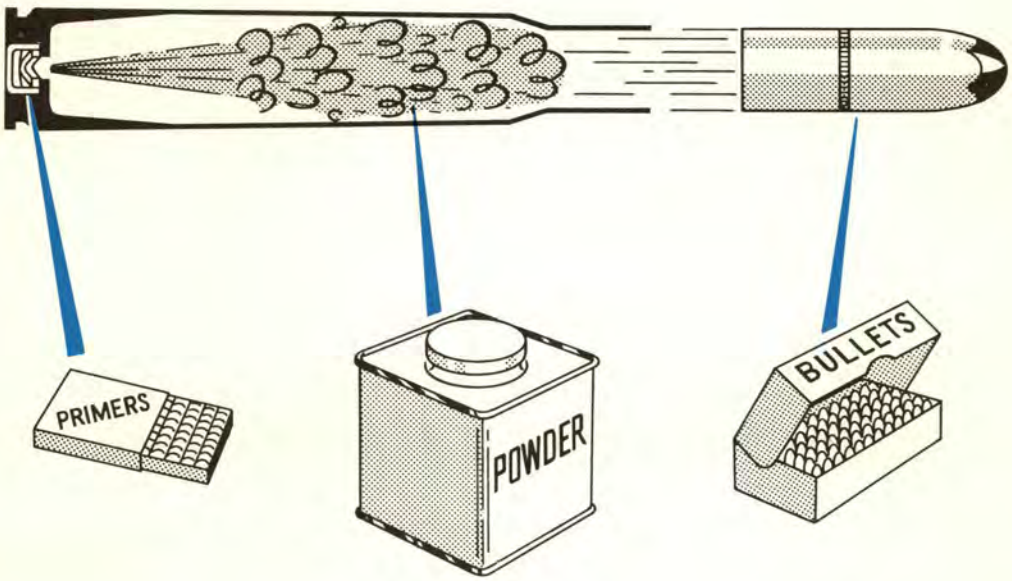
POWDER SCALE
A reliable and accurate scale is required for both safety and performance. The Lyman Ohaus D5 is guaranteed accurate to 1/10th of a grain.



*For retail prices of these items, see catalog section in back of Handbook.

BUYING THE PROPER COMPONENTS

When you fire a bullet, three components, or parts, of the original cartridge are used up. They are: (1) THE PRIMER, (2) THE POWDER CHARGE, (3) THE BULLET.



Before you can reload this cartridge and fire it again, you must purchase new components to replace those which were spent in firing. To select the proper components for your cartridge, turn to the Data Page in this Handbook which lists your cartridge. Make a note of the size of your primer and the diameter of your bullet. These sizes will be required later when you purchase components. At this time you must also choose a bullet weight and decide as to the type of powder that you want to use. At the beginning, we recommend that you select a jacketed bullet of a weight with which you are familiar, and that you begin by loading the "starting load" shown for this bullet weight. Note: Do not use pointed bullets in tubular magazine rifles.

The reference section of this Handbook contains detailed information on primers, powder and bullets. We recommend that the novice read these chapters at his earliest convenience.

GATHERING AND PREPARING CASES

You can always recognize a reloader by his almost fanatical quest for spent cartridges. He not only pockets each round that he fires, but he develops the habits of a pack rat in his zeal to con extra brass from his shooting associates. There is no mystery in his strange behavior. He simply has learned that cartridge brass is valuable, that he can turn it into extra shooting pleasure and save many dollars besides.

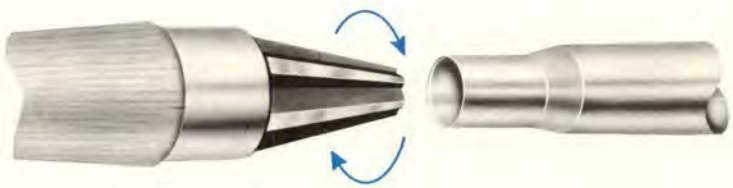
Regardless of the source from which you obtain your first cartridge cases, it is wise to separate them into lots and to keep a record of their history. For example, if you purchase two boxes of loaded factory cartridges on a certain date, keep all forty rounds together and load them as one lot. Maintaining a record of the date of purchase and the number of times you loaded these cases will be helpful in determining your CASE LIFE, and you will benefit later when *TRIMMING is required.

*Trimming is necessary when your cases have lengthened after numerous firings. The trimming of cases is not covered here in the beginner section. See reference section on CASES for complete information.

Before each reloading check your cases for splits, or cracks about the necks and body. These cracks are indications of deteriorated brass probably due to excessive reloading. Reject all cases which show signs of defects, but before you discard them, flatten them with a pair of pliers to prevent their being used again.

Cracks around the neck and splits in the body are indications of deteriorated brass probably due to excessive reloading.

To ease the insertion of the new bullet, you now remove the sharp inside edges from the case mouth. This operation is called CHAMFERING and the small commercial hand reamer does the job easily and with uniformity. Hold your case in one hand while you lightly turn the reamer in the case mouth with the other hand. Remove very little case material and DO NOT cut a sharp knife edge on the case. This operation is required only after the first firing.

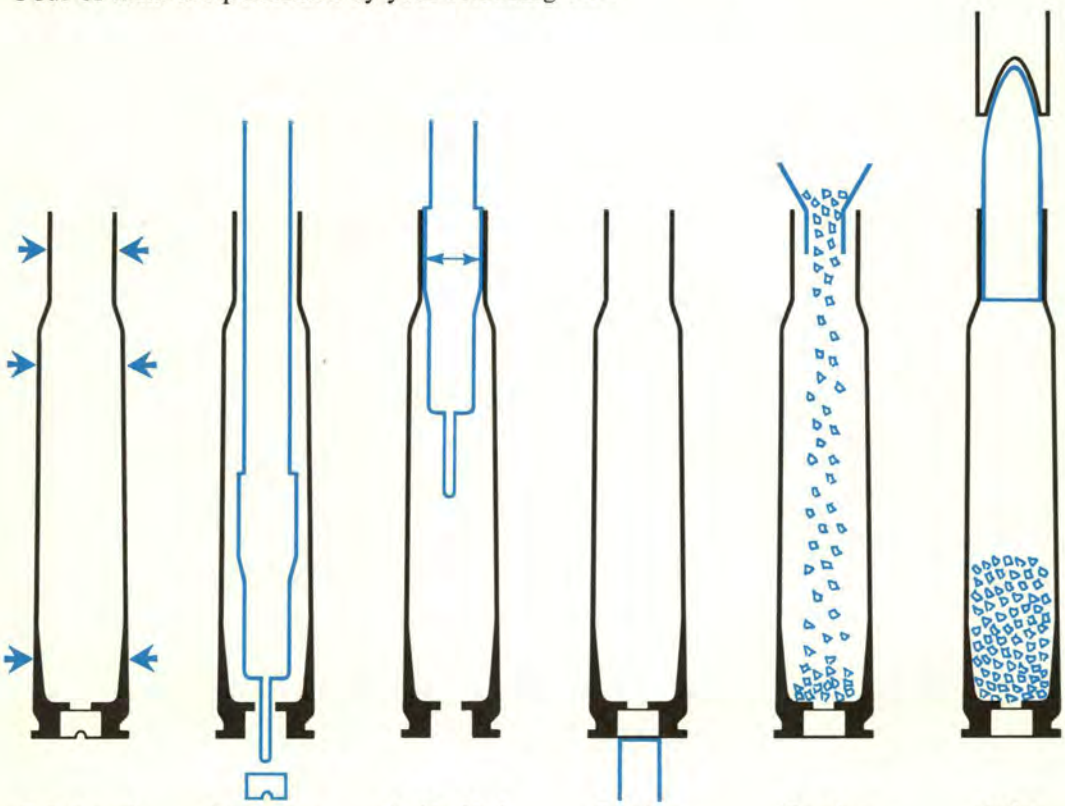


The last operation in preparing your cases for loading is to lubricate them with a suitable lubricant. This prevents the case from sticking in the resizing die and it removes dirt, or grit that might have collected. Wipe your cases carefully with a rag *SPARINGLY greased with Lyman Size-Ezy Lubricant and your cases are ready for loading. After reloading and before firing, always wipe your cases to remove the sizing lubricant.

*Too much lubricant will cause lube dents in the case. Cases dented in this manner may be used for loading as the dents disappear on firing. It is not considered good reloading practice, however, and care should be taken.

MAKING CARTRIDGES

Putting a cartridge together is really a series of SIX very basic mechanical operations. Four of them are performed by your reloading dies.



*Performed by your dies.

Let's first understand why these six operations are necessary to reload a cartridge.

1. FULL LENGTH RESIZING: When a cartridge is fired, the brass walls of the case swell to the chamber size of the rifle. These walls remain pretty much at their expanded size and do not snap back to their original dimensions. Since all rifle chambers are not identical, cases fired in one rifle may not chamber in another unless their walls are compressed to a standard diameter which is acceptable in all rifles. This operation is called resizing.
2. DECAPPING: This operation is simply knocking out the old or fired primer.
3. INSIDE NECK EXPANDING: After the resizing operation, the neck of the case will be too small to accept the bullet. Inside neck expanding enlarges the inside diameter of the neck to a size which will receive the bullet and hold it securely.

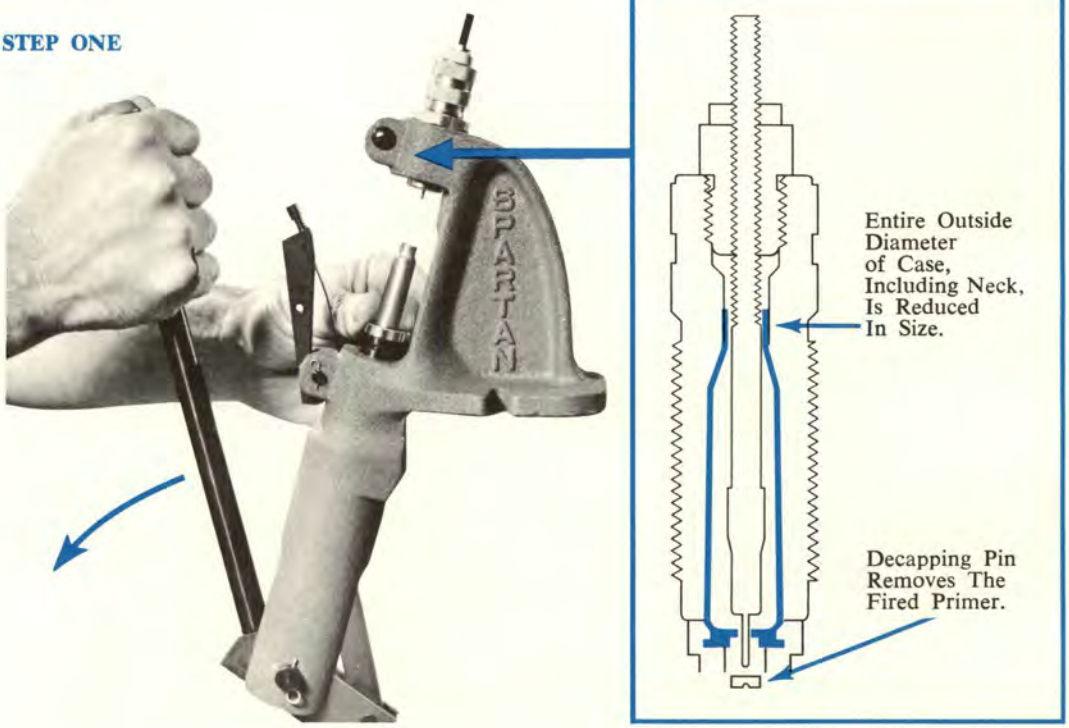
4. PRIMING: This operation is simply inserting a new primer into the case.
5. INSERTING POWDER: This operation is simply weighing out and pouring a suitable charge of powder into the case.
6. BULLET SEATING: Obviously, we need a new bullet and its careful insertion into the case is the last step in the reloading process.

In the following text we will use a set of two reloading dies to perform four of these six operations. Further along in reloading, you will hear of three die and even four die sets. Actually, the same four basic operations are accomplished with all these die sets. The difference is that two and three die sets combine some of the operations, whereas, a four die set accomplishes each operation separately.

LET'S GET STARTED

We assume that your cases have been checked and lubricated, and that your reloading press has been assembled and mounted according to the instructions supplied with the tool. Most all reloading presses can be assembled to function either on the up or down stroke. In the following illustrations the press is operating on the down-stroke. Screw your Full-Length Resizing Die into the head of your press, adjust it according to the instructions supplied with the die, and you are ready to commence loading.

STEP ONE

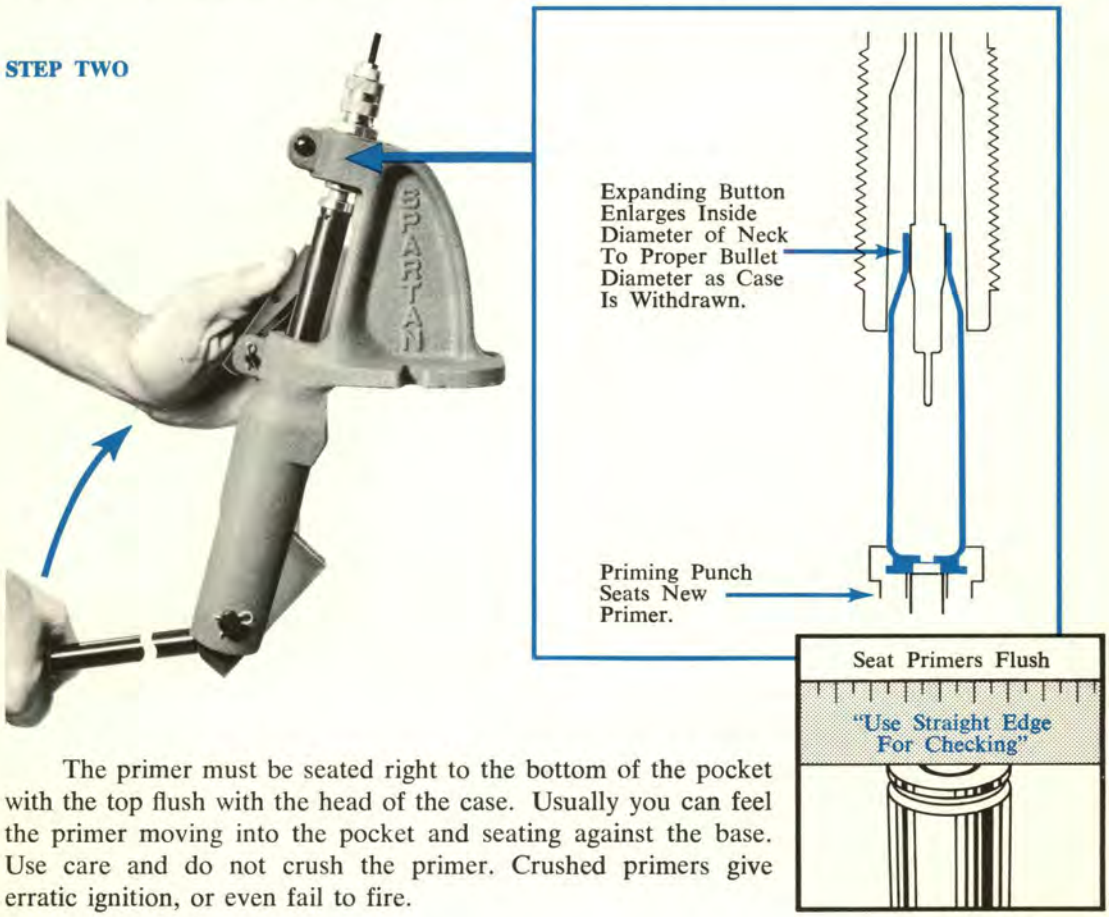


STEP ONE (Full-Length Resizing and Decapping)

Slip the head of your cartridge case into the shell holder, as shown in the illustration, and pull your press handle all the way down. If your die is adjusted properly, your entire cartridge case will enter the die flush to the shell holder. Note in the cutaway drawing how two of the original six reloading operations (full-length resizing and decapping) are accomplished by this step.

STEP TWO (Inside Neck Expanding and Priming)

As your case is withdrawn from the resizing die, two further operations are accomplished. The expanding button will automatically enlarge the neck, as pictured in the cutaway drawing, and the priming punch will seat your new primer. As the expanding action of the button is automatic, you need not be concerned with it. You must, however, place your new primer (cup side up) into the priming punch sleeve. Push the priming arm forward (toward the press) and pull up on your press handle. As the ram is lowered, the priming arm will enter the slot in the side of the ram and seat the primer.



The primer must be seated right to the bottom of the pocket with the top flush with the head of the case. Usually you can feel the primer moving into the pocket and seating against the base. Use care and do not crush the primer. Crushed primers give erratic ignition, or even fail to fire.

STEP THREE (Charging Powder)

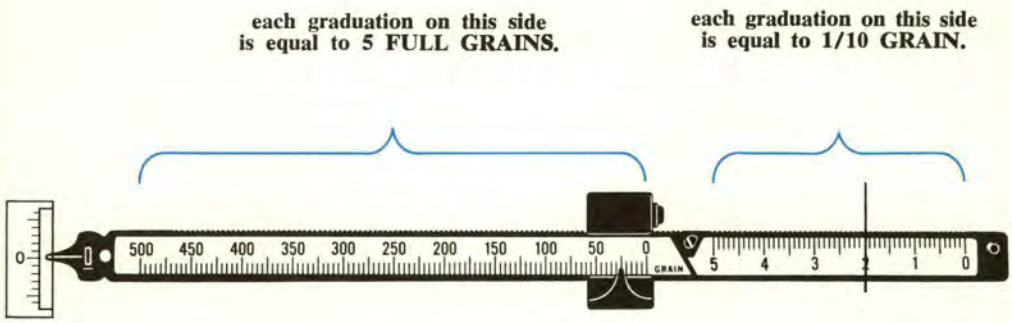
Weighing and loading the powder charge is the one operation that requires the greatest care. Not that handling modern smokeless powder is dangerous for, in fact, it is not. These powders are far less dangerous than gasoline or cleaning fluid. However, you want an accurate load and a cartridge that is safe to shoot in your rifle. Therefore, you should use every precaution in choosing and weighing your powder charge.

The data section in this Handbook specifies the powders that are appropriate for your specific cartridge and bullet weight. It also lists the suggested weight of the powder charge in grains and fractions of grains. For example, 8.5 would be read as EIGHT and FIVE-TENTHS grains. 10.0 would be read as TEN grains. Carefully level your powder scale as described in the instructions and set it to weigh your required charge. The illustration on the right indicates how to adjust your scale.

Using a spoon, slowly sprinkle small amounts of your powder into the scale pan until the beam comes into balance. The beam is in balance when the pointed end (extreme left) is exactly on the zero mark.

Carefully remove your pan and pour its contents into the cartridge case. Use your powder funnel to insure that every bit of the powder enters the case. To avoid the possibility of accidentally "DOUBLE CHARGING" a cartridge, you should develop a foolproof system of loading. A suggested method is to place all the uncharged cartridge cases on your left. As you pick up each case for charging, turn it up-side-down and shake it. This will insure that the case is empty. Turn the case right-side-up, charge it, and place it carefully on your right.

To gain the advantage of greater speed, you may eventually want to purchase a powder measure. When used in conjunction with a scale, these machines dispense powder both rapidly and accurately. A good powder measure plus a set of loading blocks, are worthwhile accessories which you should consider adding to your reloading tools. See Accessory Section for description.



This illustration shows the beam of a modern reloading scale. Note how it is graduated on both sides of the pivot point. The scale is set by moving the two weights (poise) to the proper graduations. The large poise (on the left) is used to obtain multiples of FIVE GRAINS, while the small poise (on the right) is used for FRACTIONS of a grain, or SINGLE grains from one to five.

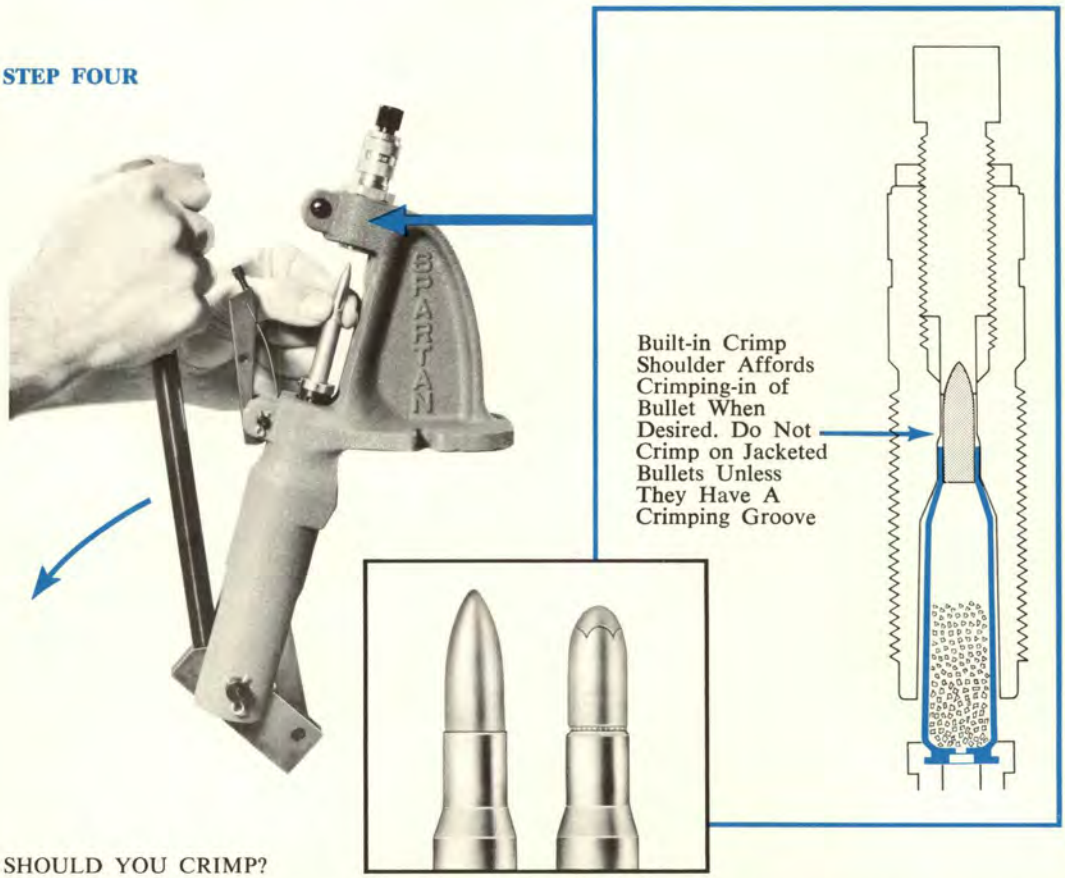
EXAMPLE: The illustration shows a setting of 27.0 grains. If you wanted to decrease this 1/10 grain, you would simply move the small poise one notch to the right.

STEP FOUR (Bullet Seating)

The last step in cartridge reloading is seating your new bullet. Make sure that the overall length of your finished round is not longer than the MAXIMUM OVERALL LENGTH listed in the Data Section. This is important because a bullet which is set too far forward will bump the rifling and build up pressure. This is explained in the Reference Section under pressure. If you have any questions as to how long your cartridges should be, compare them with an unfired factory round. It is wise to make up a sample cartridge (less powder and primer) and try it through the magazine and chamber of your rifle to insure proper functioning.

This illustration shows how a bullet is seated. Screw your bullet seating die into the head of your press and adjust it according to the instructions supplied with the die. Place a primed, charged cartridge case in the shell holder and a bullet on the mouth of the case. Pull your press handle all the way down. As the case enters the die, the bullet will be pushed firmly into the neck of the case. Adjusting the seating screw controls the depth to which the bullet is seated. Adjusting the die body controls the crimp.

STEP FOUR



SHOULD YOU CRIMP?

CRIMPING IS A MATTER OF CHOICE. ALL HUNTING LOADS WHICH WILL SEE HARD USE IN THE MAGAZINE SHOULD BE CRIMPED. BEST ACCURACY, HOWEVER, IS USUALLY OBTAINED BY NOT CRIMPING-IN THE BULLET.

This portion of the Handbook has covered the basics of rifle cartridge reloading. It is intended as a guide to help you get started. We also recommend that you read the preamble to your Data Section, along with the Reference chapters of this Handbook.

After reading this material, if you still have questions, write to the Lyman Technical Staff (see page 6). They will be glad to offer assistance.

Rifle Data

The data contained in this Handbook supersedes all previous loading data published in preceding issues of the Lyman Reloading Handbook. All data has been tested by our technicians and found to be safe when loaded with our components and fired in our test fire arms under our controlled conditions. Since the Lyman Gun Sight Corporation has no control over the actual use of this data, nor choice of the firearms and components employed, no responsibility for the use of this data is assumed.

Preamble

THE FOLLOWING ARE RECOMMENDATIONS FOR USING THIS DATA.

STARTING LOAD — It is recommended that the reader begin with the suggested weight of powder listed in this bracket and work up slowly to his best performing load. Never decrease this charge as an increase in pressure could be encountered (see pressure chapter located in reference section).

MAXIMUM LOAD — All jacketed bullet loads which are classified as maximum were tested at a safe maximum working pressure in our rifles. These loads should not be exceeded, nor should they be quickly accepted by the reader as a safe working maximum for his rifle. Read the pressure chapter located in the reference section before using these loads.

The maximum loading listed for cast lead alloy bullets, while not always representative of maximum pressure, does indicate a maximum workable velocity for the powder, bullet and caliber (see accuracy with cast bullets in reference section).

ACCURACY LOAD — As accuracy is not consistently the same with all firearms, this load requires some interpretation by the reader. Where an accuracy load is listed, it merely indicates our most accurate test results with this particular bullet weight and caliber.

Slight variations of the load may be necessary to produce optimum accuracy for your rifle. Where this load is printed in a colored panel, it indicates that the load was at, or near, a maximum pressure level. Such a load requires that the reader work up to it slowly (see pressure chapter in reference section).

FACTORY DUPLICATION LOAD — Where possible, we have listed the load which duplicated factory velocity for the bullet weight tested. It should not be assumed that this load duplicates factory pressure. Where this load is printed in a colored panel, it indicates that the load was at, or near, a maximum pressure level. Such a load requires that the reader work up to it slowly (see pressure chapter in reference section).

VELOCITIES — The velocities printed in this section were recorded at a distance of fifteen feet from the muzzle of the test firearm.

POWDERS — While a wide variety of reloading powders were used in testing loads for this Handbook, all of these powders are not listed. In all instances, however, we have listed the powders which turned in the best results in our tests.

BULLETS — The bullet chapter, located in the reference section of this Handbook, lists the various bullets used in our testing. Refering to this chapter will help you with your selection of either a cast or jacketed bullet.

.22 HORNET
(5.6 x 35 R mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast..... .223-.224
Maximum Case Length ..... 1.403″
Trim-to Length ..... 1.393″
Maximum Overall Length (w/Bullet) 1.723″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 4
Firearm used for Test .... Savage Model 219
Barrel Length ..... 26″ Twist ..... 1-16″

Only a few reloading powders are suitable for the 22 Hornet. Its small case capacity excludes the use of all bulky powders. Even the powders listed will not duplicate original factory ballistics. Fine accurate loads can be made, however, and reloading of this cartridge is well worthwhile. Most Hornet rifles have a groove diameter of .224. Some are encountered with .223 grooves. The reloader should take care to insure that his bullet diameter corresponds with his rifle groove. Due to the modest velocity, bullets with relatively thin jackets will expand best.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	10.0	2604	11.0	2785
IMR 4227	10.0	2427	11.7	2777

Accuracy Load:
IMR 4227 Powder, 11.7 Grains, 2777 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	9.5	2506	10.8	2638
IMR 4227	10.0	2364	11.3	2631

Accuracy Load:
IMR 4227 Powder, 11.3 Grains, 2631 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	9.3	2422	10.3	2570
IMR 4227	10.0	2375	11.0	2544

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	9.3	2364	10.3	2531
IMR 4227	9.5	2237	10.5	2427

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	8.0	2132	9.0	2325
IMR 4227	8.5	2183	10.0*	2341
IMR 4198	9.5*	2000	11.0*	2188

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	3.5	1669	5.0	2127
2400	6.0	1636	8.0	2207
IMR 4227	7.0	1727	9.0	2267

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	3.5	1595	5.0	2036
2400	6.0	1590	8.0	2197
IMR 4227	7.0	1712	9.0	2141

Accuracy Load:
Unique Powder, 5.0 Grains, 2036 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.218 BEE

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 1.345"
Trim-to Length ..... 1.335"
Maximum Overall Length (w/Bullet) 1.680"
Primer Size ..... Small Rifle
Lyman Shell Holder Number 10
Firearm used for Test .. Marlin over & under
Barrel Length ..... 26" Twist ..... 1-16"

The most uniform velocities and best accuracy with both lead and jacketed bullets was obtained when using I.M.R. 4227 powder. Do not use pointed bullets in those rifles which have tubular magazines. For positive expansion, use thin jacketed, light bullets which are designated as "hornet" bullets. Factory ballistics can not be duplicated with the powders currently available to the reloader.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	11.0	2645	12.5	2906
IMR 4227	11.0	2457	13.5	2932
IMR 4198	14.0	2564	15.0*	2762

Accuracy Load:
IMR 4227 Powder, 13.5 Grains, 2932 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	10.5	2463	12.0	2777
IMR 4227	11.5	2481	13.0	2754
IMR 4198	13.0	2309	14.0	2564

Accuracy Load:
IMR 4227 Powder, 12.5 Grains, 2645 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	10.0	2331	11.5	2617
IMR 4227	11.0	2331	12.5	2617
IMR 4198	12.0	2105	13.0	2325

Accuracy Load:
IMR 4227 Powder, 12.5 Grains, 2617 F.P.S.

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	9.5	2178	10.5	2487
IMR 4227	10.5	2159	11.5	2506
IMR 4198	12.0	2083	13.5	2267

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	9.5	2183	10.5	2369
IMR 4227	10.0	2087	11.5	2380
IMR 4198	12.0	2145	13.2	2309

45 Grain Cast (w/Gas Check)

BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.0	1745	5.5	2150
2400	7.0	1712	9.0	2192
IMR 4227	8.0	1801	10.0	2227

Accuracy Load:
IMR 4227 Powder, 10.0 Grains, 2227 F.P.S.

50 Grain Cast (w/Gas Check)

BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.0	1692	5.5	2053
2400	7.0	1709	9.0	2132
IMR 4227	8.0	1739	10.0	2183

Accuracy Load:
IMR 4227 Powder, 10.0 Grains, 2183 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.222 REMINGTON
(5.7 x 43mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 1.700"
Trim-to Length ..... 1.690"
Maximum Overall Length (w/Bullet) 2.130"
Primer Size ..... Small Rifle
Lyman Shell Holder Number 26
Firearm used for Test ..... Remington 700
Barrel Length ..... 24" Twist ..... 1-14"

Best results with this cartridge were obtained with I.M.R. 4198 powder. This powder turned in the most uniform velocity and accuracy with all of the jacketed bullet weights tested. I.M.R. 3031 powder also gave excellent results with jacketed bullets. All loads were tested with the new Remington 7½ primer (designed specifically for cartridges of this type).

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	3003	22.5*	3677
IMR 3031	21.0	3003	22.5*	3247
IMR 4064	21.0	2672	23.0*	2941
IMR 4895	21.0	2610	23.5*	3076
IMR 4320	22.0	2770	24.0*	3115
Rx 7	19.0	3030	21.0	3356
Rx 11	21.0	2564	23.0*	2873
Ball C²	23.0	2890	26.0*	3300
H 335	23.0	2906	26.0	3448

Accuracy Load:
4198 Powder, 20.0 Grains, 3215 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	3030	22.0*	3521
IMR 3031	21.0	2958	22.5*	3154
IMR 4064	21.0	2645	23.0*	2865
IMR 4895	21.0	2624	23.5*	2985
IMR 4320	22.0	2739	24.0*	3012
Rx 7	19.0	2967	20.5	3174
Rx 11	21.0	2645	23.0*	2824
Ball C²	23.0	2849	25.5	3144
H 335	23.0	2941	25.5	3290

Accuracy Load:
IMR 4198 Powder, 19.0 Grains, 3030 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	3039	21.0	3333
IMR 3031	21.0	2958	22.5*	3174
IMR 4064	21.0	2544	23.0*	2832
IMR 4895	22.0	2638	23.5*	3012
IMR 4350	22.0	2762	24.0*	3012
Rx 7	18.0	2816	20.0	3095
Rx 11	21.0	2666	23.0*	2857
Ball C²	22.0	2688	25.0	3105
H 335	23.0	2890	25.0	3290

Accuracy Load:
IMR 4198 Powder, 19.5 Grains, 3174 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 19.7 Grains, 3205 F.P.S.

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	18.0	2816	20.7	3268
IMR 3031	21.0	2898	22.5*	3095
IMR 4064	21.0	2577	23.0*	2808
IMR 4895	21.0	2617	23.5*	2976
IMR 4320	22.0	2666	24.0*	2994
Rx 7	17.0	2672	19.7	3039
Rx 11	21.0	2564	23.0*	2770
Ball C²	21.0	2487	24.5	2958
H 335	22.0	2688	24.5	3086

Accuracy Load:
IMR 3031 Powder, 22.5* Grains, 3095 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	18.0	2801	20.5*	3236
IMR 3031	21.0	2915	22.5*	3125
IMR 4064	21.0	2518	23.0*	2824
IMR 4895	21.0	2659	23.5*	2949
IMR 4320	22.0	2695	24.0*	2958
Rx 7	17.0	2638	19.5	3012
Rx 11	21.0	2695	23.0*	2890
Ball C²	21.0	2551	24.0	2923
H 335	22.0	2747	24.2	3105

Accuracy Load:
3031 Powder, 22.5 Grains, 3125 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	17.0	2617	19.0	2941
IMR 3031	20.0	2762	22.0*	2994
IMR 4064	21.0	2551	23.0*	2824
IMR 4895	21.0	2597	23.5*	2923
IMR 4320	22.0	2695	24.0*	2923
Rx 7	16.5	2525	18.5	2816
Rx 11	21.0	2724	23.0*	2932
Ball C²	21.0	2680	23.5	2881
H 335	21.0	2597	23.5	2958

Accuracy Load:
4895 Powder, 21.0 Grains, 2597 F.P.S.

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NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.222 REMINGTON Continued
(5.7 x 43mm)

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1795	7.0	2242
2400	9.0	1934	11.0	2320

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1748	6.5	2071
2400	8.0	1703	10.0	2049
IMR 4227	11.0	2053	13.0	2398

Accuracy Load:
Unique Powder, 5.0 Grains, 1748 F.P.S.

58 Grain Cast (w/Gas Check)
BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1674	6.5	1968
2400	8.0	1700	10.0	2040
IMR 4227	11.0	2096	13.0	2364

Accuracy Load:
IMR 4227 Powder, 11.0 Grains, 2096 F.P.S.

.223 REMINGTON
(5.56mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 1.760"
Trim-to Length ..... 1.750"
Maximum Overall Length (w/Bullet) 2.260"
Primer Size ..... Small Rifle
Lyman Shell Holder Number 26
Firearm used for Test .. Colt AR-15 Sporter
Barrel Length ..... 20" Twist ..... 1-12"

Inasmuch as bolt action, target type rifles are not available for this cartridge, test accuracy was somewhat limited. All of the jacketed loads listed functioned perfectly through the action of our semi-auto test rifle. The only cast bullet loads that would operate the action of our test gun were maximum, or near maximum loads using I.M.R. 4227 powder. All other cast bullet loads require manual operation of the bolt. All testing was done with the new Remington 7½ primer.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	22.0	3215	24.0	3497
IMR 3031	22.0	2747	25.5*	3322
IMR 4064	23.0	2570	26.0*	3039
IMR 4895	23.0	2583	26.5*	3144
IMR 4320	24.0	2702	27.5*	3205
Rx 7	21.0	3215	23.5	3509
Rx 11	23.0	2906	26.2*	3345
Ball C2	25.0	3012	28.5	3345
H 335	25.0	3125	28.5	3415

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	21.0	2967	23.0	3322
IMR 3031	22.0	2680	25.5*	3257
IMR 4064	23.0	2506	26.0*	2994
IMR 4895	23.0	2557	26.5*	3125
IMR 4320	24.0	2652	27.5*	3154
Rx 7	21.0	2985	23.0	3268
Rx 11	23.0	2739	26.0*	3448
Ball C2	25.0	2717	28.0	3115
H 335	25.0	2801	28.0	3236

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	20.0	2739	22.0	3115
IMR 3031	22.0	2688	25.5*	3257
IMR 4064	23.0	2538	26.0*	2967
IMR 4895	23.0	2570	26.5*	3115
IMR 4320	24.0	2638	27.5*	3134
Rx 7	20.0	2840	22.5	3154
Rx 11	23.0	3048	25.5*	3215
Ball C2	24.0	2666	27.5	3076
H 335	24.0	2808	27.5	3174

Accuracy Load:
IMR 4198 Powder, 21.0 Grains, 2976 F.P.S.

.223 REMINGTON Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	2666	21.6	3039
IMR 3031	22.0	2645	25.0*	3125
IMR 4064	23.0	2512	26.0*	2941
IMR 4895	23.0	2538	26.5*	3086
IMR 4320	24.0	2659	27.5*	3125
Rx 7	20.0	2941	22.3	3076
Rx 11	22.0	2747	25.0*	3154
Ball C2	24.0	2564	27.0	2915
H 335	24.0	2583	27.0	3039

Accuracy Load:
IMR 4198 Powder, 20.0 Grains, 2777 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	2645	21.7	3067
IMR 3031	21.0	2506	24.5*	3076
IMR 4064	23.0	2531	26.0*	2949
IMR 4895	23.0	2564	26.0*	3030
IMR 4320	24.0	2672	27.5*	3144
Rx 7	20.0	2770	22.0	3030
Rx 11	22.0	2617	24.5*	2898
Ball C2	23.0	2525	26.5	2949
H 335	23.0	2617	26.5	2967

Accuracy Load:
IMR 4198 Powder, 21.5 Grains, 2976 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 21.7 Grains, 3067 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	18.0	2487	20.0	2544
IMR 3031	20.0	2403	22.5	2777
IMR 4064	22.0	2409	25.0*	2808
IMR 4895	22.0	2444	25.0	2865
IMR 4320	22.0	2421	25.5	2881
Rx 7	19.0	2645	21.5	2890
Rx 11	22.0	2680	24.0	3073
Ball C2	23.0	2544	26.0	2840
H 335	23.0	2695	26.0	2915

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	1754	7.5	2169
2400	10.0	1949	11.5	2132
IMR 4227	11.0	2000	14.0	2314

Accuracy Load:
IMR 4227 Powder, 11.0 Grains, 2000 F.P.S.

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	1692	7.5	2227
2400	9.5	1788	11.0	1980
IMR 4227	11.0	1919	13.5	2222

58 Grain Cast (w/Gas Check)
BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	1664	7.5	2008
2400	9.5	1785	11.0	1980
IMR 4227	11.0	1908	13.5	2155

Accuracy Load:
Unique Powder, 5.5 Grains, 1664 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.222 REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224″
Maximum Case Length ..... 1.850″
Trim-to Length ..... 1.840″
Maximum Overall Length (w/Bullet) 2.280″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 26
Firearm used for Test ..... Remington 700
Barrel Length ..... 24″ Twist ..... 1-14″

In our testing of this cartridge, results were so good that we did not list any one particular accuracy load for jacketed bullets. All jacketed bullet weights shot well with I.M.R. 4198, I.M.R. 3031 and I.M.R. 4895 powder and gave excellent accuracy. H335 powder gave fine results with 40 grain jacketed bullets, while RX7 was excellent with the 50 and 55 grain weights. The new Remington 7½ primer was used for all testing.

.222 REM. MAGNUM Cont'd. Next Page

.222 REMINGTON MAGNUM Continued

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	22.0	3322	24.5	3787
IMR 3031	23.0	3012	26.5*	3636
IMR 4064	24.0	2754	27.0*	3322
IMR 4895	25.0	3086	27.0*	3427
IMR 4320	26.0	3144	28.0*	3448
Rx 7	22.0	3333	24.0	3598
Rx 11	24.0	2967	27.0*	3367
Ball C2	26.0	3125	29.0	3497
H 335	26.0	3205	29.0	3597

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	22.0	3278	24.0	3663
IMR 3031	23.0	3039	26.5*	3546
IMR 4064	24.0	2739	27.0*	3247
IMR 4895	24.0	2840	27.0*	3333
IMR 4320	25.0	2873	28.0*	3367
Rx 7	22.0	3236	23.5	3427
Rx 11	23.0	2610	26.5*	3184
Ball C2	25.0	2958	28.5	3333
H 335	25.0	2906	28.5	3484

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	21.0	3003	23.5	3481
IMR 3031	23.0	2967	26.5*	3497
IMR 4064	24.0	2770	27.0*	3225
IMR 4895	24.0	2857	27.0*	3311
IMR 4320	25.0	2873	27.2*	3236
Rx 7	21.0	3030	23.0	3300
Rx 11	23.0	2762	26.0*	3012
Ball C2	25.0	2906	28.0	3300
H 335	25.0	2976	28.0	3378

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	21.0	3012	23.3	3436
IMR 3031	23.0	2941	25.5*	3367
IMR 4064	24.0	2564	27.0*	3194
IMR 4895	24.0	2808	27.0*	3279
IMR 4320	24.0	2754	26.2	3225
Rx 7	20.0	2890	22.8	3268
Rx 11	22.0	2506	25.5	2958
Ball C2	24.0	2680	27.5	3125
H 335	24.0	2652	27.5	3236

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	21.0	3039	23.0	3378
IMR 3031	23.0	2949	25.0*	3290
IMR 4064	24.0	2762	27.0*	3236
IMR 4895	24.0	2840	26.5	3247
IMR 4320	23.0	2617	25.5	3076
Rx 7	20.0	2890	22.5	3194
Rx 11	23.0	2762	25.0*	2976
Ball C2	24.0	2724	27.0	3125
H 335	24.0	2793	27.2	3194

Factory Duplication Load:
IMR 4198 Powder, 21.7 Grains, 3154 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	20.0	2840	22.5	3205
IMR 3031	21.0	2659	23.0	2915
IMR 4064	22.0	2506	25.5*	3012
IMR 4895	23.0	2672	25.5	3303
IMR 4320	23.0	2631	24.5	2865
Rx 7	20.0	2816	22.0	3039
Rx 11	22.0	2659	24.5	2949
Ball C2	23.0	2659	26.5	3021
H 335	23.0	2702	26.5	3086

45 Grain Cast (w/Gas Check)

BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1984	8.0	2369
2400	9.0	1861	12.0	2375
IMR 4227	10.0	1897	14.0	2512

50 Grain Cast (w/Gas Check)

BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1934	8.0	2283
2400	9.0	1861	12.0	2331
IMR 4227	10.0	1875	14.0	2481

Accuracy Load:
2400 Powder, 10.0 Grains, 2032 F.P.S.

58 Grain Cast (w/Gas Check)

BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1831	8.0	2183
2400	9.0	1835	12.0	2298
IMR 4227	10.0	1897	14.0	2439

Accuracy Load:
2400 Powder, 10.0 Grains, 2032 F.P.S.

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.225 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224″
Maximum Case Length ..... 1.930″
Trim-to Length ..... 1.920″
Maximum Overall Length (w/Bullet) 2.500″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 5
Firearm used for Test ..... Winchester 70
Barrel Length ..... 22″ Twist ..... 1-14″

Velocity readings in this caliber tend to be very erratic from one gun to the next. Pressures tend to jump around quite a bit. Data taken in one gun will not necessarily be uniform with results in another gun.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	23.0	3086	26.0	3484
IMR 3031	26.0	3086	29.0	3497
IMR 4895	27.0	2849	30.0	3268
IMR 4064	31.0	3333	34.0	3846
IMR 4320	29.0	3067	31.0	3345
H 380	34.0	3356	38.0*	3786

Accuracy Load:
IMR 3031 Powder, 29.0 Grains, 3497 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	22.0	2865	25.0	3215
IMR 3031	25.0	2849	28.0	3257
IMR 4895	26.0	2710	29.0	3144
IMR 4064	30.0	3164	33.5	3745
IMR 4320	28.0	2857	31.0	3300
H 380	33.0	3184	37.5*	3571

Accuracy Load:
IMR 4320 Powder, 31.0 Grains, 3300 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	21.0	2710	23.0	2941
IMR 3031	25.0	2865	28.0	3225
IMR 4895	26.0	2732	29.0	3125
IMR 4064	30.0	3174	33.0	3636
IMR 4320	27.0	2808	30.0	3194
H 380	33.0	3174	37.0*	3497

Accuracy Load:
IMR 4320 Powder, 30.0 Grains, 3194 F.P.S.

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	20.0	2645	22.5	2906
IMR 3031	24.0	2793	27.0	3030
IMR 4895	25.0	2666	28.0	3012
IMR 4064	29.0	3067	32.5	3610
IMR 4320	26.0	2710	29.0	3048
H 380	32.0	3076	36.5*	3436

Accuracy Load:
IMR 4320 Powder, 29.0 Grains, 3048 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	20.0	2638	22.0	2857
IMR 3031	23.0	2652	26.0	2976
IMR 4895	25.0	2659	28.0	2976
IMR 4064	29.0	3048	32.0	3534
IMR 4320	25.0	2610	28.0	2906
H 380	32.0	3039	36.0*	3401

Accuracy Load:
IMR 4064 Powder, 31.0 Grains, 3311 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 31.4 Grains, 3413 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	19.0	2487	21.0	2695
IMR 3031	22.0	2544	25.0	2849
IMR 4895	24.0	2557	27.0	2832
IMR 4064	28.0	2923	31.5	3378
IMR 4320	24.0	2518	27.0	2816
H 380	31.0	2915	35.0	3215

Accuracy Load:
IMR 4320 Powder, 27.0 Grains, 2816 F.P.S.

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NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1838	8.0	2197
2400	9.0	1718	12.0	2136

Accuracy Load:
2400 Powder, 10.5 Grains, 1904 F.P.S.

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1824	8.0	2150
2400	10.0	1835	12.0	2136
IMR 4227	11.0	1848	14.0	2242

Accuracy Load:
2400 Powder, 11.0 Grains, 1970 F.P.S.

58 Grain Cast (w/Gas Check)
BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1727	8.0	2040
2400	10.0	1848	12.0	2092
IMR 4227	11.0	1845	14.0	2212

Accuracy Load:
2400 Powder, 12.0 Grains, 2092 F.P.S.

.224 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 1.925"
Trim-to Length ..... 1.915"
Maximum Overall Length (w/Bullet) 2.312"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 3
Firearm used for Test ..... **Weatherby Varmint Master**
Barrel Length ..... **26"** **Twist** ..... **1-14"**

In this case the use of a magnum type primer will result in very high and dangerous pressures. Use only standard large rifle primers for this cartridge. Most 40 and 45 grain bullets have jacket designs which are too thin for best results, due to premature bullet break up.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	25.0	3521	28.5	4098
IMR 3031	29.0	3597	32.5*	4149
IMR 4895	30.0	3497	33.5*	4000
IMR 4064	30.0	3448	33.0*	3875
IMR 4320	32.0	3663	35.0*	4115
Rx 11	30.0	3731	33.0*	4048

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	25.0	3448	28.0	3891
IMR 3031	29.0	3584	32.0*	3984
IMR 4895	30.0	3546	33.0*	3875
IMR 4064	30.0	3460	33.0*	3816
IMR 4320	31.0	3509	34.5*	3891
Rx 11	29.0	3174	32.5*	3663

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	24.0	3247	27.5	3708
IMR 3031	28.0	3356	31.5*	3831
IMR 4895	29.0	3322	32.5*	3745
IMR 4064	30.0	3484	33.0*	3802
IMR 4320	31.0	3460	34.0*	3802
Rx 11	29.0	3105	32.0*	3663

Accuracy Load:
IMR 4198 Powder, 27.5 Grains, 3708 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 31.0* Grains, 3787 F.P.S.

.224 WEATHERBY Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.224 WEATHERBY Continued
MAGNUM

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	24.0	3215	27.0	3623
IMR 3031	28.0	3356	31.0*	3773
IMR 4895	29.0	3247	32.0	3650
IMR 4064	30.0	3413	33.0*	3759
IMR 4320	30.0	3322	33.5*	3717
Rx 11	29.0	3268	32.0*	3584

Accuracy Load:
IMR 4198 Powder, 24.0 Grains, 3215 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	23.0	3095	26.5	3509
IMR 3031	27.0	3225	30.5*	3677
IMR 4895	28.0	3164	31.5	3597
IMR 4064	29.0	3279	32.8*	3717
IMR 4320	30.0	3311	33.0*	3650
Rx 11	28.0	3206	31.5*	3546

Accuracy Load:
IMR 4064 Powder, 32.5* Grains, 3690 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 32.8* Grains, 3717 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	23.0	2967	26.0	3356
IMR 3031	26.0	3039	29.5	3472
IMR 4895	27.0	3003	30.5	3413
IMR 4064	29.0	3247	32.0*	3559
IMR 4320	29.0	3144	32.0*	3484
Rx 11	28.0	3184	31.0*	3436

Accuracy Load:
IMR 4198 Powder, 23.0 Grains, 2967 F.P.S.

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1818	7.0	2008
2400	11.0	1964	13.0	2314

58 Grain Cast (w/Gas Check)
BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1727	8.0	2074
IMR 4227	13.0	2092	15.0	2386

Accuracy Load:
IMR 4227 Powder, 13.0 Grains, 2092 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.22/250
(22 Varminter)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 1.912"
Trim-to Length ..... 1.902"
Maximum Overall Length (w/Bullet) 2.350"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Savage 110
Barrel Length ..... 24" Twist ..... 1-14"

All of our loads for this cartridge shot extremely well. Results were so good in fact that they made the choice of the accuracy load rather difficult. For "custom" chambers (due to the wide variations in reamers used) maximum loads should be approached with extreme caution. Bullets lighter than 50 grains will probably not prove satisfactory for varmint hunting. The jackets on these light bullets are too thin for this cartridge and result in premature bullet break-up.

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40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	26.0	3367	30.5	3861
IMR 3031	30.0	3356	34.0	3875
IMR 4895	32.0	3311	37.0	3952
IMR 4064	32.0	3205	38.0*	3984
IMR 4320	33.0	3350	38.0	3921
IMR 4350	37.0	3279	41.0*	3717
Rx 11	33.0	3534	37.0	4032
Ball C²	33.0	3497	37.0	3802
H 380	36.0	3460	40.0	3759

Accuracy Load:
IMR 4064 Powder, 36.0 Grains, 3731 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	26.0	3311	30.5	3802
IMR 3031	29.0	3236	33.6	3773
IMR 4895	31.0	3184	36.0	3741
IMR 4064	31.0	3144	37.0	3875
IMR 4320	34.0	3390	38.0	3875
IMR 4350	37.0	3225	41.0*	3610
Rx 11	32.0	3472	36.0	3831
Ball C²	32.0	3125	36.5	3623
H 380	36.0	3367	40.0	3663

Accuracy Load:
IMR 4064 Powder, 37.0 Grains, 3875 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	26.0	3300	29.0	3546
IMR 3031	29.0	3205	33.0	3636
IMR 4895	30.5	3154	35.0	3584
IMR 4064	31.0	3115	36.0	3717
IMR 4320	33.0	3279	37.0	3717
IMR 4350	36.0	3134	40.0*	3571
Rx 11	32.0	3356	35.0	3731
Ball C²	32.0	3205	35.5	3460
H 380	35.0	3215	39.0	3597

Accuracy Load:
IMR 4064 Powder, 31.0 Grains, 3115 F.P.S.

52 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	25.0	3105	28.0	3390
IMR 3031	29.0	3144	33.0	3597
IMR 4895	30.0	3039	35.0	3559
IMR 4064	31.0	3076	36.0	3663
IMR 4320	32.0	3095	36.8	3650
IMR 4350	35.0	2754	39.8*	3484
Rx 11	31.0	3236	34.5	3597
Ball C²	32.0	3067	35.5	3356
H 380	34.0	3154	38.8	3534

Accuracy Load:
IMR 4064 Powder, 35.5 Grains, 3610 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	24.0	2994	27.5	3322
IMR 3031	28.0	3125	32.5	3546
IMR 4895	29.0	2994	34.0	3484
IMR 4064	31.0	3134	35.7	3650
IMR 4320	32.0	3184	36.5	3650
IMR 4350	35.0	3039	39.5*	3546
Rx 11	31.0	3247	34.0	3559
Ball C²	32.0	3174	35.0	3390
H 380	34.0	3144	38.5	3497

Accuracy Load:
IMR 4064 Powder, 35.5 Grains, 3636 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 35.7 Grains, 3650 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	24.0	2949	27.0	3159
IMR 3031	27.0	2958	31.0	3300
IMR 4895	28.0	2865	32.0	3236
IMR 4064	29.0	2932	32.5	3279
IMR 4320	32.0	3125	36.0	3497
IMR 4350	35.0	3076	39.0*	3413
Rx 11	30.0	3134	33.0	3390
Ball C²	29.0	2857	32.5	3134
H 380	34.0	3076	38.0	3378

Accuracy Load:
IMR 4198 Powder, 24.0 Grains, 2949 F.P.S.

50 Grain Cast (w/Gas Check)

BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1760	8.0	2083
2400	11.0	1956	13.0	2164
IMR 4227	13.0	2118	15.0	2267

Accuracy Load:
2400 Powder, 11.5 Grains, 2000 F.P.S.

58 Grain Cast (w/Gas Check)

BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1683	9.0	2118
2400	10.0	1754	12.0	2016
IMR 4227	13.0	2012	15.0	2222

Accuracy Load:
IMR 4227 Powder, 13.0 Grains, 2012 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.220 SWIFT

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224"
Maximum Case Length ..... 2.205"
Trim-to Length ..... 2.195"
Maximum Overall Length (w/Bullet) 2.680"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 5
Firearm used for Test ..... Winchester 70
Barrel Length ..... 26" Twist ..... 1-14"

While actual factory loading for this cartridge features a 48 grain bullet, we have used a 50 grain bullet for our factory duplication load. The 2 grains difference will have no noticeable effect on trajectory, or velocities, and the 50 grain bullet is more easily obtained, 40 and 45 grain bullets are a bit light for good performance on varmint. A case trimmer will prove to be necessary if maximum or near maximum loads are used.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	3906	39.0	4385
IMR 4895	35.0	3663	39.0	4166
IMR 4064	37.0	3891	41.0*	4347
IMR 4320	37.0	3861	41.0	4291
IMR 4350	39.0	3546	43.0*	3968
Rx 21	36.0	3610	40.5*	3906
H 380	40.0	3831	44.0*	4166

Accuracy Load:
IMR 3031 Powder, 35.0 Grains, 3906 F.P.S.

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	3717	38.5	4219
IMR 4895	34.0	3559	38.5	4065
IMR 4064	36.0	3626	40.5*	4184
IMR 4320	36.0	3663	40.5	4166
IMR 4350	39.0	3521	43.0*	3861
Rx 21	36.0	3597	40.5*	3906
H 380	39.0	3663	43.0	3984

Accuracy Load:
IMR 4895 Powder, 34.0 Grains, 3559 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	3650	38.0	4065
IMR 4895	34.0	3559	38.0	3952
IMR 4064	36.0	3650	40.0	4081
IMR 4320	36.0	3597	40.0	4000
IMR 4350	39.0	3509	43.0*	3921
Rx 21	36.0	3623	40.5*	3952
H 380	38.0	3571	42.5	3906

Accuracy Load:
IMR 3031 Powder, 34.0 Grains, 3650 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 38.9 Grains, 3984 F.P.S.

55 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	3509	37.0	3921
IMR 4895	33.0	3427	37.0	3787
IMR 4064	35.0	3472	39.0	3906
IMR 4320	35.0	3460	39.0	3861
IMR 4350	38.0	3356	42.5*	3787
Rx 21	36.0	3497	40.5*	3777
H 380	38.0	3497	42.0	3773

Accuracy Load:
IMR 3031 Powder, 33.0 Grains, 3509 F.P.S.

63 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	3215	33.5	3472
IMR 4895	30.0	3067	33.5	3378
IMR 4064	31.0	3144	35.0	3472
IMR 4320	31.0	3105	35.0	3436
IMR 4350	37.0	3322	40.0	3584
Rx 21	35.0	3448	39.0	3610
H 380	37.0	3356	41.0	3623

Accuracy Load:
IMR 4350 Powder, 37.0 Grains, 3322 F.P.S.

50 Grain Cast (w/Gas Check)

BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1751	9.0	2222
2400	11.0	2004	13.0	2202
IMR 4227	13.0	2105	15.0	2320

Accuracy Load:
2400 Powder, 11.5 Grains, 2050 F.P.S.

58 Grain Cast (w/Gas Check)

BULLET #225462 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1689	9.0	2114
2400	12.0	2070	14.0	2298
IMR 4227	13.0	2105	15.0	2304

Accuracy Load:
Unique Powder, 9.0 Grains, 2114 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.22 SAVAGE HI-POWER

(5.6 x 52R mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .228″
Maximum Case Length ..... 2.050″
Trim-to Length ..... 2.040″
Maximum Overall Length (w/Bullet) 2.510″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 6
Firearm used for Test ..... Savage 99
Barrel Length ..... 20″ Twist ..... 1-12″

Variations in groove diameters are sometimes encountered in rifles chambered for this cartridge. Most barrels have a groove diameter of .228 while a small percentage are found with a larger groove of .229. Jacketed bullets of .228 diameter work well when used in a standard groove (.228) barrel. For oversize barrels, we recommend the use of cast lead alloy bullets (sized to the exact groove diameter).

70 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	24.0	2433	27.0	2777
IMR 4895	25.0	2400	28.0	2754
IMR 4320	27.0	2652	30.0	2840

Accuracy Load:
IMR 3031 Powder, 25.3 Grains, 2604 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 25.5 Grains, 2624 F.P.S.

60 Grain Cast (w/Gas Check)

BULLET #228365 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.5	1754	7.7	1908
2400	11.0	1811	13.0	2074
IMR 4227	12.0	1893	14.0	2145

Accuracy Load:
Unique Powder, 6.5 Grains, 1754 F.P.S.

78 Grain Cast

BULLET #22835 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1501	7.0	1625
2400	9.0	1562	11.5	1730
IMR 4227	10.0	1590	12.5	1792

Accuracy Load:
IMR 4227 Powder, 10.0 Grains, 1590 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.243 WINCHESTER

(6.2 x 52mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .243″
Maximum Case Length ..... 2.045″
Trim-to Length ..... 2.035″
Maximum Overall Length (w/Bullet) 2.710″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Winchester 70
Barrel Length ..... 22″ Twist ..... 1-10″

If your .243 rifle is imported, we recommend that you carefully check its groove diameter. We have encountered rifles with groove diameters as small as .239. When fired in these **tight groove** rifles, factory loaded .243 cartridges blew primers and even our starting loads proved **too hot**. We, therefore, advise that you consider any rifle with a groove diameter of under .241 as dangerous.

In "standard groove" domestic rifles all of the I.M.R. powders gave excellent results. For long range varmint shooting, we recommend the use of 80 or 85 grain bullets as they do not lose their velocity as rapidly as the lighter projectiles.

.243 WINCHESTER Cont'd. Next Page

.243 WINCHESTER Continued
(6.2 x 52mm)

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	3086	38.5	3413
IMR 4064	37.0	3067	42.5	3521
IMR 4320	38.0	3067	43.5	3497
IMR 4895	40.0	3322	44.5	3745
IMR 4350	44.0	3076	49.0*	3546
Rx 21	39.0	3012	43.5*	3322
Ball C2	36.0	3012	40.0	3401
H 380	42.0	3205	47.5	3597
4831	43.0	2732	48.0*	3174

Accuracy Load:
IMR 4895 Powder, 40.0 Grains, 3322 F.P.S.

70 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2985	38.0	3268
IMR 4064	37.0	2994	42.0	3378
IMR 4320	38.0	3030	43.0	3413
IMR 4895	40.0	3300	44.0	3623
IMR 4350	43.0	3021	48.5*	3460
Rx 21	38.0	2984	43.0*	3280
Ball C2	36.0	2923	39.5	3184
H 380	41.0	3012	46.0	3460
4831	43.0	2688	48.0*	3115

Accuracy Load:
IMR 4895 Powder, 40.0 Grains, 3300 F.P.S.

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2967	37.5	3247
IMR 4064	37.0	3012	41.5	3356
IMR 4320	37.0	2906	42.5	3333
IMR 4895	38.0	3184	43.5	3571
IMR 4350	43.0	2994	48.0*	3427
Rx 21	38.0	2976	42.8*	3300
Ball C2	34.0	2824	39.0	3154
H 380	41.0	2994	46.0	3367
4831	43.0	2816	48.0*	3184

Accuracy Load:
IMR 4895 Powder, 38.0 Grains, 3184 F.P.S.

80 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2865	37.0	3134
IMR 4064	36.0	2873	40.0	3164
IMR 4320	37.0	2915	41.5	3205
IMR 4895	38.0	3067	42.0	3367
IMR 4350	41.0	2808	46.0	3279
Rx 21	37.0	2923	42.5*	3225
Ball C2	34.0	2770	38.5	3095
H 380	40.0	2881	45.0	3257
4831	43.0	2732	48.0*	3144

Accuracy Load:
IMR 4350 Powder, 45.5 Grains, 3215 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 45.7 Grains, 3257 F.P.S.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2890	36.5	3115
IMR 4064	35.0	2923	39.5	3164
IMR 4320	37.0	2906	41.0	3184
IMR 4895	37.0	3012	41.5	3345
IMR 4350	41.0	2906	45.5	3279
Rx 21	39.0	3021	41.5	3225
Ball C2	34.0	2770	38.0	3021
H 380	40.0	2923	44.5	3247
4831	43.0	2906	48.0*	3225

Accuracy Load:
IMR 4895 Powder, 38.0 Grains, 3082 F.P.S.

90 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2770	36.0	3012
IMR 4064	35.0	2801	39.0	3058
IMR 4320	36.0	2873	40.5	3144
IMR 4895	37.0	2976	41.0	3257
IMR 4350	41.0	2865	45.0	3174
Rx 21	37.5	2793	40.5	2985
Ball C2	33.0	2617	37.5	2915
H 380	40.0	2840	44.0	3184
4831	42.0	2754	47.0*	3105

Accuracy Load:
IMR 4895 Powder, 38.0 Grains, 3050 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2583	35.5	2857
IMR 4064	34.0	2638	38.5	2941
IMR 4320	36.0	2739	40.0	3003
IMR 4895	36.0	2808	40.5	3115
IMR 4350	40.0	2717	44.5	3067
Rx 21	36.0	2695	39.0	2857
Ball C2	33.0	2538	37.0	2754
H 380	39.0	2710	43.5	2994
4831	41.0	2617	46.0	2949

Accuracy Load:
IMR 4064 Powder, 34.0 Grains, 2638 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 38.6 Grains, 2906 F.P.S.

80 Grain Cast (w/Gas Check)
BULLET #245496 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1615	11.0	1945
2400	12.0	1703	15.0	1988
IMR 4227	15.0	1897	18.0	2150

Accuracy Load:
Unique Powder, 11.0 Grains, 1945 F.P.S.

95 Grain Cast (w/Gas Check)
BULLET #245497 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1438	11.0	1865
2400	10.0	1449	15.0	1901
IMR 4227	13.0	1658	18.0	2079

Accuracy Load:
Unique Powder, 11.0 Grains, 1865 F.P.S.

100 Grain Cast (w/Gas Check)
BULLET #245498 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1384	10.0	1718
2400	10.0	1403	14.0	1770
IMR 4227	13.0	1597	17.0	1926

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6MM REMINGTON
244 REMINGTON

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .243″
Maximum Case Length ..... 2.233″
Trim-to Length ..... 2.225″
Maximum Overall Length (w/Bullet) 2.825″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Remington 700
Barrel Length ..... 22″ Twist ..... 1-9″

The only difference between the 6 M/M Remington and the .244 Remington cartridge is in the factory bullet weights which are loaded into these two cases. The cases themselves are identical except for the headstamps.

Normally, .244 rifles have a 1-12″ twist and the cartridge is factory loaded with 75 and 90 grain bullets to accommodate this rifling. The 6 M/M Remington cartridge is factory loaded with a 100 grain bullet to better accommodate the 1-9″ twist of the 6 M/M rifles.

While our listed data is interchangeable for both of these cartridges, we recommend that bullets under 90 grains be used in the .244 Remington. Bullets over 75 grains are suggested for the 6 M/M Remington.

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	3076	40.5	3623
IMR 4895	38.0	3154	42.5	3571
IMR 4064	39.0	3134	43.5	3377
IMR 4320	38.0	3095	42.5	3472
IMR 4350	44.0	3184	49.0*	3559
Rx 11	35.0	2906	39.5	3356
RX 21	40.0	2824	46.5*	3311
Ball C²	36.0	2994	41.0	3401
H 380	42.0	3144	48.5*	3663

Accuracy Load: (for 1-12″ Twist)
IMR 4350 Powder, 44.0 Grains, 3184 F.P.S.

70 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	3021	40.0	3401
IMR 4895	38.0	3039	42.0	3427
IMR 4064	39.0	3095	43.0	3521
IMR 4320	38.0	2994	42.0	3333
IMR 4350	43.0	3021	48.5*	3484
Rx 11	35.0	2770	39.0	3184
Rx 21	40.0	2801	46.0*	3194
Ball C²	36.0	2890	40.5	3247
H 380	41.0	3021	47.0	3497

Accuracy Load: (for 1-12″ Twist)
IMR 4350 Powder, 48.5* Grains, 3484 F.P.S.

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2967	39.5	3345
IMR 4895	37.0	3012	41.5	3367
IMR 4064	38.0	3215	42.5	3378
IMR 4320	37.0	2915	41.5	3279
IMR 4350	43.0	3058	48.0*	3460
Rx 11	34.0	2793	38.5	3205
Rx 21	40.0	2906	45.5*	3311
Ball C²	34.0	2777	40.0	3184
H 380	41.0	2985	46.5	3436

Accuracy Load:
IMR 4350 Powder, 45.0 Grains, 3247 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 45.0 Grains, 3247 F.P.S.

80 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2873	38.5	3225
IMR 4895	36.0	2881	40.0	3154
IMR 4064	37.0	2967	41.5	3333
IMR 4320	36.0	2832	40.0	3115
IMR 4350	42.0	2941	47.0	3367
Rx 11	34.0	2801	38.0	3095
Rx 21	40.0	2898	45.0*	3225
Ball C²	34.0	2747	39.5	3086
H 380	40.0	2932	46.0	3345

Accuracy Load:
IMR 4895 Powder, 36.0 Grains, 2881 F.P.S.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2881	38.0	3164
IMR 4895	35.0	2808	39.5	3154
IMR 4064	37.0	2976	41.0	3268
IMR 4320	35.0	2754	39.5	3039
IMR 4350	41.0	2890	46.0	3279
Rx 11	33.0	2785	37.5	3067
Rx 21	39.0	2923	44.0*	3215
Ball C²	34.0	2717	39.0	3048
H 380	40.0	2865	45.5	3290

Accuracy Load:
IMR 4895 Powder, 35.0 Grains, 2808 F.P.S.

90 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2770	37.5	3095
IMR 4895	35.0	2785	39.0	3076
IMR 4064	36.0	2890	40.5	3184
IMR 4320	35.0	2688	39.0	2985
IMR 4350	40.0	2785	45.0	3184
Rx 11	32.0	2604	37.0	2958
Rx 21	38.0	2732	43.0*	3086
Ball C²	33.0	2638	38.5	2994
H 380	40.0	2890	45.0	3205

Accuracy Load:
Rx 21 Powder, 41.0 Grains, 2945 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 43.0 Grains, 3003 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6mm REMINGTON Cont'd. Next Page

6MM REMINGTON
244 REMINGTON

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2717	37.0	2985
IMR 4895	34.0	2631	38.5	2958
IMR 4064	36.0	2754	40.0	3095
IMR 4320	36.0	2732	38.5	2898
IMR 4350	40.0	2732	44.5	3048
Rx 11	32.0	2531	36.0	2849
Rx 21	37.0	2645	42.0	2949
Ball C2	33.0	2557	38.0	2881
H 380	39.0	2777	44.5	3105

Accuracy Load: (for 1-9" Twist)
IMR 4320 Powder, 36.0 Grains, 2732 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 39.9 Grains, 3086 F.P.S.

80 Grain Cast (w/Gas Check)
BULLET #245496 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1736	12.0	2024
2400	12.0	1706	16.0	2040
IMR 4227	15.0	1868	19.0	2207

Accuracy Load:
IMR 4227 Powder, 15.0 Grains, 1868 F.P.S.

95 Grain Cast (w/Gas Check)
BULLET #245497 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1545	11.0	1860
2400	11.0	1559	15.0	1926
IMR 4227	14.0	1742	18.0	2070

Accuracy Load:
Unique Powder, 11.0 Grains, 1860 F.P.S.

100 Grain Cast (w/Gas Check)
BULLET #245498 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1408	10.0	1730
2400	10.0	1434	14.0	1800
IMR 4227	13.0	1639	17.0	1945

Accuracy Load: (for 1-9" Twist)
2400 Powder, 14.0 Grains, 1800 F.P.S.

25/20 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .257"
Maximum Case Length ..... 1.330"
Trim-to Length ..... 1.320"
Maximum Overall Length (w/Bullet) 1.592"
Primer Size ..... Small Rifle
Lyman Shell Holder Number 10
Firearm used for Test ..... Winchester 92
Barrel Length ..... 20" Twist ..... 1-14"

While I.M.R. 4198 powder proved to be the best selection for the jacketed bullets tested, our best accuracy was obtained with cast bullets. All three powders listed for cast bullets produced uniform velocity and fine accuracy.

Use only round, or flat nose bullets, in those rifles which have tubular magazines. Caution; these loads are not intended for rifles which were designed for black powder cartridges.

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1535	6.0	1820
2400	9.0	1661	11.0	2074
IMR 4227	10.0	1672	12.0	2032
IMR 4198	13.0	1821	15.0*	2100
H 110	8.4	1510	9.5	1730

Accuracy Load:
IMR 4198 Powder, 13.0 Grains, 1821 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 14.6 Grains, 2044* F.P.S.

86 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.5	1219	5.5	1508
2400	7.0	1150	9.0	1610
IMR 4227	8.0	1213	10.7	1713
IMR 4198	10.5	1283	13.0*	1751
H 110	7.0	1060	8.0	1294

Factory Duplication Load:
IMR 4198 Powder, 10.5 Grains, 1283 F.P.S.

69 Grain Cast (w/Gas Check)
BULLET #257420 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1672	6.0	1941
2400	9.0	1785	11.0	2096
IMR 4198	13.0*	1904	14.0*	2000

Accuracy Load:
IMR 4198 Powder, 13.0 Grains, 1904* F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

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91 Grain Cast (w/Gas Check)
BULLET #257312 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.5	1428	5.5	1623
2400	7.0	1379	9.0	1745
IMR 4198	11.0*	1630	13.0*	1882

Accuracy Load:
Unique Powder, 5.5 Grains, 1623 F.P.S.

.256 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .257″
Maximum Case Length ..... 1.281″
Trim-to Length ..... 1.275″
Maximum Overall Length (w/Bullet) 1.590″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 1
Firearm used for Test ..... Marlin 62
Barrel Length ..... 24″ Twist ..... 1-14″

Many of the rifles chambered for this cartridge have slightly oversize chambers which create a problem for the reloader. These chambers cause excessive case stretching which makes it impossible to resize brass after two or three firings.

The small case capacity of the cartridge limits suitable reloading powders to a very few. Ballistics and accuracy, however, are good.

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	2512	16.0	2754
IMR 4227	15.0	2557	17.0*	2816
IMR 4198	17.0	2487	18.5*	2666
Ball C[2]	20.0	2027	22.0*	2227
H 335	21.0	2028	23.0*	2314

Accuracy Load:
IMR 4227 Powder, 16.0 Grains, 2739 F.P.S.

Factory Duplication Load:
IMR 4227 Powder, 16.2 Grains, 2747 F.P.S.

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	2169	14.0	2469
IMR 4227	14.0	2252	16.0*	2557
IMR 4198	14.0	1912	16.0*	2262
Ball C[2]	19.0	1901	21.0*	2136
H 335	19.0	1992	21.0*	2237

Accuracy Load:
IMR 4227 Powder, 16.0* Grains, 2557 F.P.S.

86 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	11.0	1872	13.0	2212
IMR 4227	12.0	1809	14.0	2197
IMR 4198	13.0	1798	15.0*	2105
Ball C[2]	18.0	1782	20.0*	2040
H 335	18.0	1845	20.0*	2083

70 Grain Cast (w/Gas Check)
BULLET #257420 (#2 ALLOY

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1669	6.0	1883
2400	9.0	1745	11.0	2105
IMR 4227	10.0	1779	12.0	2096

Accuracy Load:
Unique Powder, 6.0 Grains, 1883 F.P.S.

90 Grain Cast (w/Gas Check)
BULLET #257312 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1492	6.0	1697
2400	10.0	1808	12.0	2123
IMR 4227	11.0	1824	13.0	2123

Accuracy Load:
Unique Powder, 6.0 Grains, 1697 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

250/3000 SAVAGE

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .257″
Maximum Case Length ..... 1.912″
Trim-to Length ..... 1.902″
Maximum Overall Length (w/Bullet) 2.515″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test .... Custom 98 Mauser
Barrel Length ..... 24″ Twist ..... 1-14″

A good many rifles which are chambered for this cartridge have 1-10″ twist barrels. In these rifles, the 60 or 75 grain bullets will seldom give accuracy. Use heavier bullets for best results.

The Sierra 75 grain hollow point proved very accurate in our test rifle (1-14″ twist) and worked well with all powders.

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	3184	37.0	3650
IMR 4895	34.0	3039	38.0	3472
IMR 4064	35.0	3095	39.0*	3484
IMR 4320	36.0	3154	40.0	3610
Ball C2	36.0	3184	40.0	3509
H 335	34.0	3279	38.0	3401
H 380	39.0	3105	43.0*	3390

Accuracy Load:
IMR 4320 Powder, 40.0 Grains, 3610 F.P.S.

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	3003	36.0	3472
IMR 4895	33.0	2881	37.0	3300
IMR 4064	34.0	2906	38.0*	3322
IMR 4320	35.0	2976	39.0	3427
Ball C2	35.0	2985	39.0	3300
H 335	33.0	2793	37.0	3058
H 380	38.0	2967	42.0*	3164

Accuracy Load:
IMR 4320 Powder, 35.0 Grains, 2976 F.P.S.

87 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2840	35.0	3247
IMR 4895	32.0	2747	36.5	3194
IMR 4064	33.0	2816	37.0*	3205
IMR 4320	34.0	2873	38.0	3236
Ball C2	34.0	2906	38.0	3154
H 335	33.0	2645	36.0	2923
H 380	37.0	2824	41.0*	3012

Accuracy Load:
IMR 4064 Powder, 33.0 Grains, 2816 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 32.5 Grains, 3030 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2695	33.0	3012
IMR 4895	31.0	2624	35.5	3003
IMR 4064	31.0	2577	35.5	3021
IMR 4320	33.0	2754	37.0	3115
Ball C2	31.0	2463	35.0	2801
H 335	32.0	2544	34.0	2702
H 380	35.0	2645	39.0	2865

Accuracy Load:
IMR 3031 Powder, 31.0 Grains, 2801 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 31.2 Grains, 2816 F.P.S.

117 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	28.0	2444	31.0	2672
IMR 4895	31.0	2570	33.5	2747
IMR 4064	30.0	2463	33.5	2710
IMR 4320	32.0	2557	35.0	2793
Ball C2	29.0	2283	32.0	2481
H 335	30.0	2369	32.0	2506
H 380	32.0	2427	36.0	2702

Accuracy Load:
IMR 4320 Powder, 32.0 Grains, 2557 F.P.S.

69 Grain Cast (w/Gas Check)

BULLET #257420 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1872	10.0	2141
2400	13.0	1988	15.0	2192
IMR 4227	16.0	2159	17.0	2272

250/3000 SAVAGE Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

90 Grain Cast (w/Gas Check)
BULLET #257312 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1564	11.0	2044
2400	10.0	1519	14.0	1949
IMR 4227	13.0	1770	16.0	2053

Accuracy Load:
Unique Powder, 11.0 Grains, 2044 F.P.S.

100 Grain Cast (w/Gas Check)
BULLET #257418 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1607	11.0	1945
2400	11.0	1522	14.0	1858
IMR 4227	12.0	1554	15.0	1865

Accuracy Load:
Unique Powder, 8.0 Grains, 1607 F.P.S.

.257 ROBERTS

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .257″
Maximum Case Length ..... 2.233″
Trim-to Length ..... 2.223″
Maximum Overall Length (w/Bullet) 2.775″
Primer Size ..... Large Rifle
Lyman Shell Holder Number ..... 2 or 8
Firearm used for Test .... Custom Mauser 98
Barrel Length ..... 24″ Twist ..... 1-12″

Most commercial rifles for this cartridge used a short magazine which limits overall cartridge length to 2.775″. Prevalent also was the use of a long chamber throat which gives its best results when the bullet is seated just short of touching the rifling (see "Accuracy with jacketed bullets" in reference section).

Remington and Winchester brass varies in the contour of the extractor cut and requires different shell holders. Use #2 shell holder for Remington and Peters. Use #8 shell holder for Winchester and Western.

The Sierra 75 grain hollow point bullet proved to be an exceptionally fine performer in this cartridge.

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	3345	41.0	3623
IMR 4895	39.0	3205	43.0	3497
IMR 4064	41.0	3345	45.0	3690
IMR 4320	40.0	3247	44.0	3521
Ball C2	37.0	3236	43.0	3559
H 380	42.0	3194	47.0	3546

Accuracy Load:
IMR 4895 Powder, 39.0 Grains, 3205 F.P.S.

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2976	40.0	3311
IMR 4895	38.0	2890	42.0	3268
IMR 4064	40.0	3012	44.0	3509
IMR 4320	38.0	2808	42.0	3144
Ball C2	36.0	2801	42.0	3311
H 380	41.0	2906	45.0	3236

Accuracy Load:
IMR 4064 Powder, 40.0 Grains, 3012 F.P.S.

87 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2840	39.0	3134
IMR 4895	36.0	2724	40.0	3030
IMR 4064	39.0	2932	43.0	3311
IMR 4320	36.0	2659	40.0	2932
Ball C2	37.0	2824	41.0	3030
H 380	40.0	2849	44.0	3086

Accuracy Load:
IMR 4064 Powder, 40.5 Grains, 3067 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 40.4 Grains, 3058 F.P.S.

.257 ROBERTS Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2717	38.0	2985
IMR 4895	35.0	2577	39.0	2881
IMR 4064	36.0	2631	40.0	2958
IMR 4320	34.0	2463	38.5	2793
Ball C2	36.0	2747	40.0	2898
H 380	38.0	2564	42.0	2857

Accuracy Load:
IMR 4064 Powder, 37.0 Grains, 2724 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 36.5 Grains, 2688 F.P.S.

117 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2341	33.0	2551
IMR 4895	31.0	2288	34.0	2493
IMR 4064	32.0	2347	36.0	2610
IMR 4320	33.0	2369	36.0	2595
Ball C2	32.0	2380	35.0	2564
H 380	34.0	2325	38.0	2544

Accuracy Load:
IMR 4064 Powder, 35.8 Grains, 2590 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 35.8 Grains, 2590 F.P.S.

69 Grain Cast (w/Gas Check)
BULLET #257420 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1875	11.0	2145
2400	14.0	1990	16.0	2195
IMR 4227	17.0	2160	18.0	2275

90 Grain Cast (w/Gas Check)
BULLET #257312 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1565	12.0	2050
2400	11.0	1525	15.0	1950
IMR 4227	14.0	1775	17.0	2065

Accuracy Load:
Unique Powder, 12.0 Grains, 2050 F.P.S.

100 Grain Cast (w/Gas Check)
BULLET #257418 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1615	12.0	1950
2400	12.0	1530	15.0	1860
IMR 4227	13.0	1560	16.0	1870

Accuracy Load:
Unique Powder, 9.0 Grains, 1615 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.257 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .257″
Maximum Case Length ..... 2.550″
Trim-to Length ..... 2.540″
Maximum Overall Length (w/Bullet) 3.250″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test .... Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-12″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only**. The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby, Inc. for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Cast bullet data was obtained with Remington 9½ primers.

For varmint shooting, we recommend bullet weights from 75 to 100 grains.

.257 WEATHERBY Cont'd. Next Page

.257 WEATHERBY MAGNUM Continued

60 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	57.0	3497	63.0	3952
IMR 4320	59.0	3623	65.0	4065
IMR 4350	66.0	3534	73.0	4149
H 380	64.0	3663	70.0	4184
H 450	68.0	3401	75.0	3937
4831	70.0	3472	77.0	4000

75 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	55.0	3367	61.0	3745
IMR 4320	57.0	3460	63.0	3875
IMR 4350	64.0	3390	71.0	4048
H 380	62.0	3472	68.0	3952
H 450	67.0	3311	73.0	3802
4831	68.0	3367	75.0	3891

Accuracy Load:
H 380 Powder, 62.0 Grains, 3472 F.P.S.

87 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	52.0	3125	58.0	3521
IMR 4320	54.0	3290	60.0	3597
IMR 4350	62.0	3279	69.0	3759
H 380	60.0	3401	66.0	3690
H 450	65.0	3225	71.0	3559
4831	66.0	3184	73.0	3731

Accuracy Load:
IMR 4350 Powder, 68.4 Grains, 3745 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 68.3 Grains, 3731 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	50.0	2898	56.0	3279
IMR 4320	52.0	3021	58.0	3390
IMR 4350	59.0	3048	66.0	3472
H 380	58.0	3086	63.0	3367
H 450	62.0	2832	68.0	3215
4831	63.0	2923	70.0	3436

Accuracy Load:
IMR 4350 Powder, 66.0 Grains, 3472 F.P.S.

117 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	48.0	2739	53.0	3012
IMR 4320	50.0	2801	55.0	3105
IMR 4350	58.0	2976	64.0	3322
H 380	56.0	2906	61.0	3164
H 450	59.0	2672	65.0	3076
4831	60.0	2824	67.0	3215

Accuracy Load:
IMR 4350 Powder, 64.0 Grains, 3322 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 64.0 Grains, 3322 F.P.S.

90 Grain Cast (w/Gas Check)

BULLET #257312 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1915	19.0	2386
2400	19.0	1984	24.0	2309

Accuracy Load:
Unique Powder, 15.0 Grains, 2070 F.P.S.

100 Grain Cast (w/Gas Check)

BULLET #257418 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1763	16.0	2079
2400	18.0	1808	23.0	2145

Accuracy Load:
Unique Powder, 12.0 Grains, 1763 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6.5 JAPANESE

(6.5 x 50mm Arisaka)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .264″
Bullet Dia. Cast ..... .264″ to .266″
Maximum Case Length ..... 1.988″
Trim-to Length ..... 1.978″
Maximum Overall Length (w/Bullet) 2.940″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 5
Firearm used for Test
Barrel Length ..... **19″** **Japanese Service Carbine Twist** ..... **1-9″**

Norma brass was used exclusively for our testing of this cartridge. Bullets weighing 120 grains or more gave the best accuracy. Avoid bullets which are designed for the 6.5 magnum sporters as these bullets will not expand properly when fired at the more moderate velocities of the 6.5 Japanese.

A wide variation in groove diameter is common with these military rifles and we recommend that you slug your bore before reloading. If the jacketed bullet size listed, does not coincide with the groove diameter of your particular rifle, we suggest that you consider the use of a cast bullet.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2506	37.0	2898
IMR 4895	35.0	2557	39.0	2840
IMR 4064	36.0	2500	40.0*	2873
IMR 4320	37.0	2577	41.0	2915
H 380	39.0	2577	43.5*	2865

Accuracy Load:
IMR 4320 Powder, 41.0 Grains, 2915 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2444	36.0	2754
IMR 4895	34.0	2415	38.0	2754
IMR 4064	35.0	2421	39.0*	2747
IMR 4320	36.0	2481	40.0	2840
IMR 4350	38.0	2298	41.5*	2525
Ball C2	38.0	2604	41.0	2840
H 335	37.0	2590	40.0	2857
H 380	39.0	2525	43.0*	2739

Accuracy Load:
H 335 Powder, 37.0 Grains, 2590 F.P.S.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2358	35.0	2638
IMR 4895	33.0	2341	37.0	2659
IMR 4064	34.0	2358	38.0*	2688
IMR 4320	35.0	2375	39.0	2739
IMR 4350	38.0	2325	41.5*	2557
Ball C2	35.0	2380	39.0	2672
H 335	35.0	2450	38.0	2702
H 380	38.0	2439	43.0*	2702

Accuracy Load:
IMR 4064 Powder, 34.0 Grains, 2358 F.P.S.

129 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2314	34.0	2544
IMR 4895	32.0	2237	36.0	2525
IMR 4064	33.0	2252	37.0*	2570
IMR 4320	34.0	2320	38.0	2610
IMR 4350	38.0	2298	41.5*	2557
Ball C2	34.0	2257	38.0	2544
H 335	34.0	2331	37.0	2551
H 380	38.0	2403	42.0*	2610

Accuracy Load:
IMR 3031 Powder, 34.0 Grains, 2544 F.P.S.

140 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2192	33.0	2409
IMR 4895	31.0	2150	35.0	2433
IMR 4064	32.0	2183	36.0*	2475
IMR 4320	33.0	2232	37.0	2512
IMR 4350	36.0	2141	40.0*	2409
Ball C2	33.0	2164	37.0	2444
H 335	33.0	2252	36.0	2457
H 380	37.0	2298	41.0*	2487

Accuracy Load:
IMR 3031 Powder, 31.5 Grains, 2309 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 31.2 Grains, 2272 F.P.S.

160 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	25.0	1800	28.0	2020
IMR 4895	27.0	1824	30.0	2049
IMR 4064	28.0	1868	31.0	2087
IMR 4320	29.0	1915	32.0	2123
IMR 4350	31.0	1778	35.0*	2100
Ball C2	29.0	1860	32.0	2100
H 335	28.0	1805	31.0	2070
H 380	32.0	1976	36.0*	2164

Accuracy Load:
IMR 3031 Powder, 26.5 Grains, 1923 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 26.3 Grains, 1901 F.P.S.

6.5 JAPANESE Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6.5 JAPANESE Continued
(6.5 x 50mm Arisaka)

103 Grain Cast (w/Gas Check)
BULLET #266305 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	16.5	1824	19.0	2044
IMR 4227	21.0	2028	23.0	2207
IMR 4198	24.0	2114	27.0	2352
IMR 4895	28.0	2016	33.0	2375

Accuracy Load:
IMR 4198 Powder, 24.0 Grains, 2114 F.P.S.

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	15.0	1615	18.0	1868
IMR 4227	19.5	1893	22.0	2083
IMR 4198	22.0	1919	24.0	2057
IMR 4895	28.0	1976	31.0	2092

Accuracy Load:
2400 Powder, 15.0 Grains, 1615 F.P.S.

129 Grain Cast (w/Gas Check)
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	1488	19.0	1960
IMR 4227	19.0	1818	21.0	1988
IMR 4198	23.0	1980	27.0	2145
IMR 4895	27.0	1996	31.0	2242

Accuracy Load:
IMR 4198 Powder, 23.5 Grains, 1999 F.P.S.

143 Grain Cast (w/Gas Check)
BULLET #266469 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	1515	18.0	1845
IMR 4227	18.0	1683	21.0	1956
IMR 4198	22.0	1893	26.0	2159
IMR 4895	26.0	1858	32.0	2272

Accuracy Load:
IMR 4895 Powder, 26.0 Grains, 1858 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6.5 ITALIAN
(6.5 x 52mm Mannlicher Carcano)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .264″
Bullet Dia. Cast ..... .264″ to .266″
Maximum Case Length ..... 2.060″
Trim-to Length ..... 2.055″
Maximum Overall Length (w/Bullet) 2.900″
Primer Size ..... Large Rifle
Lyman Shell Holder Number ..... Special
Firearm used for Test
Italian Service Carbine
Barrel Length .. 21″ Twist .. Gain Twist

Due to the wide variations in groove diameters which exist in these surplus military rifles, we suggest that you proceed with caution. Slug your bore to determine the correct bullet diameter for your rifle. See "Accuracy with cast bullets" in the reference section for information on slugging your bore. If your groove diameter is larger than .264″, you could experience gas blow-by (gas from breech due to low pressure) when using the listed starting loads with the standard bullet size. We suggest that you wear shooting glasses when working out loads and that you consider the use of cast bullets sized to the exact groove diameter of your particular rifle.

6.5 ITALIAN Cont'd. Next Page

6.5 ITALIAN Continued
(6.5 x 52mm Mannlicher Carcano)

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2475	36.0	2645
IMR 4895	35.0	2347	38.0	2617
IMR 4064	36.0	2487	39.0	2710
IMR 4320	36.0	2444	40.0	2801
H 380	39.0	2493	43.0	2754

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2288	34.0	2564
IMR 4895	32.0	2132	36.0	2506
IMR 4064	34.0	2237	38.0	2590
IMR 4320	35.0	2347	39.0	2652
H 380	38.0	2392	41.0	2570

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2262	33.0	2439
IMR 4895	32.0	2202	35.0	2415
IMR 4064	33.0	2242	37.0	2506
IMR 4320	34.0	2247	38.0	2557
H 380	37.0	2352	40.0	2538

Accuracy Load:
IMR 4064 Powder, 37.0 Grains, 2506 F.P.S.

140 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	29.0	1988	32.0	2257
IMR 4895	31.0	2123	34.0	2364
IMR 4064	32.0	2123	36.0	2409
IMR 4320	33.0	2183	37.0	2475
H 380	35.0	2202	39.0	2421

Accuracy Load:
IMR 4064 Powder, 34.0 Grains, 2275 F.P.S.

160 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	28.0	1919	31.0	2136
IMR 4895	30.0	1980	33.0	2227
IMR 4064	31.0	2020	35.0	2298
IMR 4320	32.0	2096	36.0	2341
H 380	34.0	2087	38.0	2267

Accuracy Load:
IMR 4320 Powder, 34.6 Grains, 2247 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 34.7 Grains, 2262 F.P.S.

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1445	11.0	1615
2400	21.0	1960	23.0	2114

Accuracy Load:
Unique Powder, 10.0 Grains, 1520 F.P.S.

129 Grain Cast (w/Gas Check)
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1351	10.0	1529
2400	19.0	1901	21.0	2040

Accuracy Load:
Unique Powder, 10.0 Grains, 1529 F.P.S.

143 Grain Cast (w/Gas Check)
BULLET #266469 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1296	10.0	1481
2400	15.0	1545	18.0	1763

Accuracy Load:
2400 Powder, 15.0 Grains, 1545 F.P.S.

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6.5 x 54mm MANNLICHER-SCHOENAUER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .264″
Maximum Case Length ..... 2.110″
Trim-to Length ..... 2.100″
Maximum Overall Length (w/Bullet) 3.010″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 28
Firearm used for Test ..... Custom Mauser
Barrel Length ..... 20″ Twist ..... 1-7½″

For our testing of this cartridge, we used Norma brass exclusively. Bullets of 120 grains, or heavier, are necessary to obtain accuracy. I.M.R. 4895 and I.M.R. 4064 powders turned in the most consistent velocities.

Better than half of the rifles which we have encountered in this caliber show signs of excessive headspace. Before using a 6.5 x 54 M/M rifle, we recommend that its headspace be checked by a competent gunsmith.

6.5 x 54mm MANNLICHER-SCHOENAUER Cont'd. Next Page

6.5 x 54mm MANNLICHER-SCHOENAUER Continued

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2785	41.0	3184
IMR 4895	36.0	2538	42.0	3105
IMR 4064	37.0	2570	43.0	3144
Ball C²	37.0	2628	43.0	2941
H 380	42.0	2785	47.0	3086

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2747	40.0	3030
IMR 4895	36.0	2590	41.0	2949
IMR 4064	37.0	2631	42.0	3012
Ball C²	37.0	2617	42.0	2890
H 380	41.0	2680	46.0	2994

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2421	38.0	2732
IMR 4895	34.0	2364	39.0	2717
IMR 4064	35.0	2398	40.0	2747
Ball C²	35.0	2369	40.0	2645
H 380	39.0	2469	44.0	2762

Accuracy Load:
IMR 4064 Powder, 36.0 Grains, 2470 F.P.S.

129 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2283	37.0	2624
IMR 4895	33.0	2250	38.0	2620
IMR 4064	34.0	2267	39.0	2645
Ball C²	34.0	2270	39.0	2520
H 380	38.0	2347	43.0	2688

Accuracy Load:
IMR 4895 Powder, 35.1 Grains, 2375 F.P.S.

140 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2159	35.0	2421
IMR 4895	32.0	2132	36.0	2409
IMR 4064	32.0	2109	37.0	2421
Ball C²	32.0	2070	37.0	2366
H 380	36.0	2207	41.0	2531

Accuracy Load:
IMR 4064 Powder, 34.0 Grains, 2260 F.P.S.

Factory Duplication Load:
H 380 Powder, 40.0 Grains, 2450 F.P.S.

160 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	28.0	1908	33.0	2197
IMR 4895	30.0	1960	34.0	2207
IMR 4064	31.0	1912	35.0	2262
Ball C²	31.0	1930	35.0	2145
H 380	34.0	2044	39.0	2341

Accuracy Load:
IMR 4895 Powder, 34.0 Grains, 2207 F.P.S.

Factory Duplication Load:
H 380 Powder, 39.0 Grains, 2341 F.P.S.

103 Grain Cast (w/Gas Check)
BULLET #266305 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	1535	19.0	2114
IMR 4227	13.0	1526	22.0	2257
IMR 4198	16.0	1655	24.0	2183
IMR 4895	20.0	1524	31.0	2232

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	1466	19.0	2004
IMR 4227	13.0	1508	21.5	2092
IMR 4198	16.0	1592	24.0	2127
IMR 4895	20.0	1519	31.0	2178

Accuracy Load:
2400 Powder, 18.0 Grains, 1945 F.P.S.

129 Grain Cast
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	1466	19.0	1996
IMR 4227	13.0	1474	21.5	2074
IMR 4198	16.0	1639	23.0	2066
IMR 4895	20.0	1602	31.0	2257

Accuracy Load:
2400 Powder, 18.5 Grains, 1945 F.P.S.

143 Grain Cast (w/Gas Check)
BULLET #266469 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	1390	19.0	1923
IMR 4227	13.0	1382	21.0	1953
IMR 4198	16.0	1510	22.0	1915
IMR 4895	19.0	1400	30.0	2132

Accuracy Load:
2400 Powder, 18.5 Grains, 1872 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

6.5 x 55mm
(Swedish)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .264″
Bullet Dia. Cast ..... .264″ to .266″
Maximum Case Length ..... 2.160″
Trim-to Length ..... 2.150″
Maximum Overall Length (w/Bullet) 3.062″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 27

Firearm used for Test
Swedish Military Carbine
Barrel Length ..... 18″ Twist ..... 1-7½″

As with many foreign rifles, the groove diameter of these Swedish Carbines can vary considerably. We recommend that you slug the bore of your rifle before reloading. See "Accuracy with cast bullets" for information on slugging the bore. If the jacketed bullet size listed, does not coincide with the groove diameter of your particular rifle, we suggest that you consider the use of a cast bullet.

The factory duplication loads which we have shown for this cartridge may be somewhat misleading in that they do not coincide with the 139 gr. and 156 gr. loads offered by Norma. We have used 140 gr. and 160 gr. loads as they are most commonly reloaded.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2906	45.0	3247
IMR 4895	43.0	2857	48.0	3236
IMR 4064	43.0	2808	48.0	3247
IMR 4320	44.0	2865	49.0	3257
H 380	48.0	2941	53.0	3225

Accuracy Load:
IMR 4320 Powder, 45.0 Grains, 2941 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2739	43.0	3021
IMR 4895	41.0	2702	46.0	3058
IMR 4064	41.0	2666	46.0	3058
IMR 4320	42.0	2717	47.0	3067
H 380	46.0	2747	51.0	3076

Accuracy Load:
IMR 4320 Powder, 43.0 Grains, 2805 F.P.S.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2500	41.0	2770
IMR 4895	39.0	2551	43.0	2793
IMR 4064	39.0	2500	43.0	2770
IMR 4320	41.0	2617	45.0	2873
H 380	44.0	2597	49.0	2890

Accuracy Load:
IMR 3031 Powder, 37.0 Grains, 2500 F.P.S.

129 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2375	39.0	2583
IMR 4895	38.0	2463	42.0	2688
IMR 4064	38.0	2427	42.0	2638
IMR 4320	40.0	2506	44.0	2754
H 380	42.0	2444	47.0	2688

Accuracy Load:
IMR 4064 Powder, 42.0 Grains, 2638 F.P.S.

140 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2242	37.0	2415
IMR 4895	36.0	2304	40.0	2512
IMR 4064	36.0	2267	40.0	2506
IMR 4320	39.0	2421	43.0	2645
H 380	41.0	2325	46.0	2615

Accuracy Load:
IMR 4320 Powder, 42.0 Grains, 2577 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 42.8 Grains, 2631 F.P.S.

160 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	31.0	2032	34.0	2207
IMR 4895	33.0	2040	37.0	2288
IMR 4064	33.0	2036	37.0	2237
IMR 4320	35.0	2132	39.0	2331
H 380	39.0	2178	43.0	2392

Accuracy Load:
IMR 4320 Powder, 39.0 Grains, 2331 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 38.9 Grains, 2320 F.P.S.

6.5x55mm Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	1506	20.0	1919
IMR 4227	16.0	1600	23.0	2032
IMR 4895	23.0	1585	31.0	2036

Accuracy Load:
IMR 4227 Powder, 17.0 Grains, 1660 F.P.S.

129 Grain Cast (w/Gas Check)
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	1530	20.0	1930
IMR 4227	16.0	1625	23.0	2057
IMR 4895	23.0	1663	31.0	2105

Accuracy Load:
2400 Powder, 20.0 Grains, 1930 F.P.S.

143 Grain Cast (w/Gas Check)
BULLET #266469 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	14.0	1459	20.0	1872
IMR 4227	16.0	1515	23.0	1941
IMR 4895	21.0	1453	30.0	1934

Accuracy Load:
IMR 4227 Powder, 23.0 Grains, 1941 F.P.S.

6.5 REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .264″
Maximum Case Length ..... 2.170″
Trim-to Length ..... 2.160″
Maximum Overall Length (w/Bullet) 2.800″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Remington 600
Barrel Length ..... 18½″ Twist ..... 1-9″

Jacketed loads for this cartridge seem to perform equally well with either standard or magnum large rifle primers. Remington factory ammunition uses the Remington 9½ (magnum) primer. **For cast bullet loads use only standard large rifle primers.**

In testing we used bullets up to, and including 129 grains. Bullets heavier than this would require excessively deep seating to function through the magazine.

Cast bullet loads using Unique powder were found to be very accurate.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	45.0	2645	50.0	2967
IMR 4320	47.0	2739	52.0	3076
IMR 4350	53.0	2747	58.0	3164
H 380	50.0	2881	55.0	3048
H 450	54.0	2652	62.0	3115

Accuracy Load:
IMR 4320 Powder, 47.0 Grains, 2739 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	43.0	2597	47.0	2801
IMR 4320	45.0	2702	49.0	2906
IMR 4350	52.0	2762	56.0	3012
H 380	47.0	2732	51.0	2881
H 450	53.0	2570	60.0	2932

Accuracy Load:
IMR 4320 Powder, 47.0 Grains, 2810 F.P.S.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	39.0	2398	45.0	2638
IMR 4320	42.0	2481	47.0	2747
IMR 4350	49.0	2570	53.0	2808
H 380	45.0	2518	49.0	2695
H 450	51.0	2439	57.0	2717

Accuracy Load:
IMR 4320 Powder, 42.0 Grains, 2481 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 53.0 Grains, 2808 F.P.S.

6.5 REMINGTON Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

129 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4320	41.0	2398	46.0	2638
IMR 4350	48.0	2531	52.0	2747
H 380	44.0	2518	48.0	2624
H 450	50.0	2398	56.0	2631

Accuracy Load:
IMR 4320 Powder, 41.0 Grains, 2398 F.P.S.

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1773	16.0	1923
2400	18.0	1738	23.0	2070

Accuracy Load:
Unique Powder, 16.0 Grains, 1923 F.P.S.

127 Grain Cast (w/Gas Check)
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1685	15.0	1811
2400	17.0	1683	22.0	1988

Accuracy Load:
Unique Powder, 14.0 Grains, 1760 F.P.S.

.264 WINCHESTER MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .264″
Maximum Case Length ..... 2.500″
Trim-to Length ..... 2.490″
Maximum Overall Length (w/Bullet) 3.340″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... **Winchester 70**
Barrel Length ..... **24″** **Twist** ..... **1-9″**

Remington 9½M (Magnum) primers were used for all of the jacketed loads listed. Either magnum or standard large rifle primers are suitable for jacketed bullets. **For cast bullet loads use only standard large rifle primers.**

Pressures in this cartridge tend to jump suddenly and the reloader should approach maximum loads with extreme caution.

The Sierra 120 grain bullet gave excellent results as did I.M.R. 4350 and Hodgdons 4831 powder.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	49.0	3311	54.0	3571
IMR 4064	52.0	3311	57.0	3546
IMR 4895	53.0	3390	58.0	3650
IMR 4320	53.0	3401	58.0	3663
IMR 4350	58.0	3345	64.5	3677
Rx 21	51.0	3058	56.5	3345
H 380	56.0	3311	62.0	3534
4831	66.0	3367	73.0	3717

Accuracy Load:
IMR 4350 Powder, 58.0 Grains, 3345 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	48.0	3154	52.0	3356
IMR 4064	50.0	3144	55.5	3378
IMR 4895	52.0	3257	56.0	3436
IMR 4320	52.0	3300	56.0	3484
IMR 4350	58.0	3333	62.0	3509
Rx 21	50.0	3086	55.0	3300
H 380	54.0	3215	60.0	3390
4831	64.0	3322	71.0	3650

Accuracy Load:
4831 Powder, 68.0 Grains, 3546 F.P.S.

Factory Duplication Load:
4831 Powder, 66.6 Grains, 3460 F.P.S.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	46.0	2865	50.0	3058
IMR 4064	49.0	2923	52.5	3076
IMR 4895	50.0	2985	54.0	3144
IMR 4320	50.0	2985	54.0	3154
IMR 4350	56.0	3174	60.0	3290
Rx 21	49.0	2923	54.0	3115
H 380	52.0	2923	58.0	3205
4831	62.0	3164	66.5	3311

Accuracy Load:
4350 Powder, 60.0 Grains, 3290 F.P.S.

.264 WINCHESTER Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

129 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	45.0	2747	49.0	2923
IMR 4064	47.0	2762	51.0	2949
IMR 4895	49.0	2865	53.0	3039
IMR 4320	49.0	2881	53.0	3048
IMR 4350	55.0	2994	59.0	3164
Rx 21	48.0	2793	53.0	2994
H 380	50.0	2762	56.0	3039
4831	59.0	2958	64.5	3174

Accuracy Load:
IMR 4350 Powder, 59.0 Grains, 3164 F.P.S.

140 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	44.0	2638	48.0	2801
IMR 4064	46.0	2645	50.0	2801
IMR 4895	48.0	2724	52.0	2898
IMR 4320	48.0	2717	52.0	2906
IMR 4350	53.0	2840	58.0	2958
Rx 21	47.0	2645	52.0	2849
H 380	49.0	2617	54.0	2832
4831	57.0	2793	63.0	2976

Accuracy Load:
4831 Powder, 61.0 Grains, 2898 F.P.S.

Factory Duplication Load:
4831 Powder, 62.5 Grains, 2958 F.P.S.

160 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2409	46.0	2597
IMR 4064	44.0	2244	48.0	2597
IMR 4895	46.0	2538	50.0	2688
IMR 4320	46.0	2493	50.0	2659
IMR 4350	51.0	2645	56.0	2816
Rx 21	45.0	2475	50.0	2659
H 380	46.0	2398	52.0	2659
4831	52.0	2551	59.0	2793

Accuracy Load:
4831 Powder, 52.0 Grains, 2551 F.P.S.

119 Grain Cast
BULLET #266324 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1677	16.0	1869
2400	20.0	1851	26.0	2178
IMR 4227	24.0	1976	28.0	2192

Accuracy Load:
2400 Powder, 21.0 Grains, 1901 F.P.S.

129 Grain Cast (w/Gas Check)
BULLET #266455 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1633	16.0	1831
2400	20.0	1851	25.0	2105
IMR 4227	24.0	1988	27.0	2118

Accuracy Load:
Unique Powder, 16.0 Grains, 1831 F.P.S.

143 Grain Cast (w/Gas Check)
BULLET #266469 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1497	15.0	1700
2400	19.0	1733	24.0	1980
IMR 4227	22.0	1824	26.0	2008

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1824 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.270 WINCHESTER
(6.9 x 64mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .277″
Maximum Case Length ..... 2.540″
Trim-to Length ..... 2.530″
Maximum Overall Length (w/Bullet) 3.340″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Savage 110
Barrel Length..... 22″ Twist ..... 1-10″

Very slight changes in the powder charge seem to jump pressures in this cartridge. We advise that you approach maximum charges with extreme caution.

The 130 grain bullets which are available for the 270 are excellent for deer loads. Heavier bullets offer very little expansion except on larger animals.

.270 WINCHESTER Cont'd. Next Page

.270 WINCHESTER Continued
(6.9 x 64mm)

90 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2994	47.5	3322
IMR 4895	47.0	3076	52.0	3413
IMR 4064	47.0	3095	52.5	3460
IMR 4320	47.0	3030	52.5	3401
IMR 4350	51.5	2976	61.5*	3497
Rx 21	50.0	3076	55.0	3311
H 380	50.0	3076	56.0	3345
4831	55.0	2923	61.0*	3164

Accuracy Load:
IMR 4350 Powder, 56.5 Grains, 3225 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2949	47.0	3236
IMR 4895	46.0	3012	51.5	3333
IMR 4064	47.0	3048	52.0	3367
IMR 4320	47.0	3030	52.0	3257
IMR 4350	55.0	3174	61.0*	3521
Rx 21	48.0	2906	53.0	3174
H 380	49.0	3021	54.0	3236
4831	56.0	2949	61.0*	3247

Accuracy Load:
IMR 4895 Powder, 50.0 Grains, 3290 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 49.9 Grains, 3279 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2762	45.0	2923
IMR 4895	44.0	2754	49.0	3031
IMR 4064	44.0	2732	49.0	3012
IMR 4320	45.0	2785	50.0	3058
IMR 4350	50.0	2816	56.5	3174
Rx 21	47.0	2732	52.0	2967
H 380	47.0	2666	52.0	2932
4831	54.0	2808	60.0*	3076

Accuracy Load:
IMR 4350 Powder, 55.5 Grains, 3134 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 56.0 Grains, 3164 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2500	43.0	2695
IMR 4895	41.0	2500	46.5	2785
IMR 4064	42.0	2538	47.0	2808
IMR 4320	42.0	2583	47.5	2832
IMR 4350	48.0	2659	53.5	2941
Rx 21	44.0	2557	49.0	2770
H 380	45.0	2570	50.0	2777
4831	53.0	2695	59.0*	3012

Accuracy Load:
4831 Powder, 53.0 Grains, 2695 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 50.0 Grains, 2762 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2217	41.0	2427
IMR 4895	39.0	2267	43.0	2450
IMR 4064	40.0	2309	44.0	2475
IMR 4320	40.0	2309	44.0	2493
IMR 4350	46.0	2427	51.0	2680
Rx 21	42.0	2288	46.0	2463
H 380	42.0	2369	47.0	2500
4831	52.0	2551	57.0*	2777

109 Grain Cast (w/Gas Check)
BULLET #280468 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1510	14.0	1945
2400	16.0	1732	25.0	2320
IMR 4227	16.0	1652	27.0	2352
IMR 4198	20.0	1848	30.0	2415
IMR 4895	35.0	2277	40.0	2538

Accuracy Load:
Unique Powder, 10.0 Grains, 1595 F.P.S.

128 Grain Cast (w/Gas Check)
BULLET #280473 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1326	13.0	1760
2400	16.0	1661	24.0	2155
IMR 4227	15.0	1584	26.0	2164
IMR 4198	20.0	1779	29.0	2267
IMR 4895	35.0	2262	39.0	2493

Accuracy Load:
IMR 4198 Powder, 24.0 Grains, 1990 F.P.S.

139 Grain Cast (w/Gas Check)
BULLET #280412 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1262	12.0	1607
2400	15.0	1515	23.0	2036
IMR 4227	15.0	1447	25.0	2049
IMR 4198	20.0	1691	28.0	2164
IMR 4895	34.0	2132	38.0	2352

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.270 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .277″
Maximum Case Length ..... 2.550″
Trim-to Length ..... 2.540″
Maximum Overall Length (w/Bullet) 3.250″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test .. Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-12″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only.** The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby, Inc. for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Only standard large rifle primers should be used with cast bullet loads.

90 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	56.0	3086	62.0	3559
IMR 4320	59.0	3268	65.0	3677
IMR 4350	64.0	3125	73.0	3773
H 380	60.0	3067	68.0	3623
H 450	70.0	3268	78.0	3831
4831	71.0	3257	79.0*	3802

Accuracy Load:
IMR 4064 Powder, 58.0 Grains, 3225 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	55.0	2994	62.0	3413
IMR 4320	58.0	3125	64.0	3497
IMR 4350	63.0	3003	72.0	3597
H 380	61.0	3003	67.0	3448
H 450	69.0	3003	77.0	3636
4831	70.0	3154	78.0*	3663

Accuracy Load:
4831 Powder, 78.0* Grains, 3663 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	54.0	2890	61.0	3236
IMR 4320	57.0	3039	63.0	3345
IMR 4350	60.0	2923	67.0	3247
H 380	60.0	3039	66.0	3322
H 450	65.0	2958	72.0	3333
4831	66.0	2890	73.0	3345

Accuracy Load:
IMR 4350 Powder, 67.0 Grains, 3275 F.P.S.

Factory Duplication Load:
4831 Powder, 72.6 Grains, 3322 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	52.0	2732	59.0	3048
IMR 4320	56.0	2949	61.0	3157
IMR 4350	59.0	2801	65.0	3115
H 380	58.0	2898	64.0	3164
H 450	63.0	2801	70.0	3125
4831	63.0	2777	70.0	3184

Accuracy Load:
4831 Powder, 69.5 Grains, 3115 F.P.S.

Factory Duplication Load:
4831 Powder, 69.6 Grains, 3144 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	50.0	2531	56.0	2793
IMR 4320	52.0	2624	58.0	2890
IMR 4350	55.0	2518	61.0	2793
H 380	55.0	2610	60.0	2824
H 450	58.0	2444	64.0	2710
4831	59.0	2518	65.0	2816

109 Grain Cast (w/Gas Check)

BULLET #280468 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1875	18.0	2169
2400	22.0	1956	28.0	2364
IMR 4227	27.0	2096	29.0	2232

Accuracy Load:
Unique Powder, 14.0 Grains, 1875 F.P.S.

.270 WEATHERBY Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

125 Grain Cast (w/Gas Check)
BULLET #280473 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1756	16.0	1882
2400	20.0	1785	26.0	2118
IMR 4227	25.0	1964	27.0	2053

Accuracy Load:
IMR 4227 Powder, 27.0 Grains, 2053 F.P.S.

139 Grain Cast (w/Gas Check)
BULLET #280412 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1639	16.0	1838
2400	20.0	1762	25.0	2040
IMR 4227	24.0	1879	26.0	1988

Accuracy Load:
Unique Powder, 16.0 Grains, 1838 F.P.S.

7mm MAUSER
(7 x 57mm)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .284″
Bullet Dia. Cast ..... .284″ to .287″
Maximum Case Length ..... 2.235″
Trim-to Length ..... 2.225″
Maximum Overall Length (w/Bullet) 3.065″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Mauser 95
Barrel Length ..... 29″ Twist ..... 1-10″

Most 7 M/M's are imported rifles and their groove diameters can vary considerably. We recommend that you slug your barrel to determine its exact groove diameter. The "Accuracy with Cast Bullets" chapter which is located in the reference section of this Handbook will explain how this is accomplished.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2717	43.0	2958
IMR 4895	41.0	2824	45.0	3067
IMR 4064	41.0	2770	45.0	3048
IMR 4320	42.0	2816	47.0	3067
IMR 4350	45.0	2652	50.0*	2932
Rx 21	41.0	2617	47.0*	2932
Ball C2	41.0	2688	45.0	2958
H 380	43.0	2652	48.0	2949
4831	50.0	2666	53.5*	2865

Accuracy Load:
IMR 4895 Powder, 41.0 Grains, 2824 F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2493	41.0	2762
IMR 4895	38.0	2564	43.0	2881
IMR 4064	39.0	2557	43.0	2824
IMR 4320	41.0	2666	45.0	2898
IMR 4350	43.0	2475	48.0*	2785
Rx 21	41.0	2358	46.0*	2645
Ball C2	39.0	2427	43.0	2695
H 380	41.0	2525	46.0	2785
4831	49.0	2583	53.5*	2816

Accuracy Load:
IMR 4895 Powder, 42.0 Grains, 2816 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2433	40.0	2672
IMR 4895	38.0	2380	42.0	2785
IMR 4064	38.0	2487	42.0	2732
IMR 4320	40.0	2570	44.0	2824
IMR 4350	42.0	2427	47.0	2739
Rx 21	40.0	2352	45.0*	2624
Ball C2	38.0	2409	42.0	2645
H 380	41.0	2506	45.0	2710
4831	48.0	2538	53.0*	2816

Accuracy Load:
IMR 4320 Powder, 44.0 Grains, 2824 F.P.S.

7mm MAUSER Cont'd. Next Page

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7mm MAUSER Continued
(7 x 57mm)

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2336	39.0	2590
IMR 4895	36.0	2369	40.0	2590
IMR 4064	36.0	2309	40.0	2570
IMR 4320	39.0	2475	43.0	2666
IMR 4350	41.0	2358	46.0	2604
Rx 21	39.0	2267	44.0	2531
Ball C2	36.0	2232	40.0	2475
H 380	40.0	2380	44.0	2590
4831	46.0	2375	51.0*	2652

Accuracy Load:
IMR 4350 Powder, 45.0 Grains, 2575 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2293	38.0	2463
IMR 4895	35.0	2237	39.0	2512
IMR 4064	35.0	2178	39.0	2439
IMR 4320	38.0	2341	42.0	2583
IMR 4350	41.0	2079	45.0	2531
Rx 21	38.0	2109	43.0	2457
Ball C2	35.0	2096	39.0	2347
H 380	39.0	2320	43.0	2500
4831	45.0	2272	50.0*	2570

Accuracy Load:
IMR 4320 Powder, 41.1 Grains, 2506 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 41.2 Grains, 2538 F.P.S.

123 Grain Cast (w/Gas Check)
BULLET #287448 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1718	17.0	2212
2400	17.0	1872	21.0	2164
IMR 4227	17.0	1818	20.0	2040

Accuracy Load:
IMR 4227 Powder, 17.1 Grains, 1830 F.P.S.

139 Grain Cast (w/Gas Check)
BULLET #287343 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1639	16.0	1850
2400	17.0	1840	20.0	2036
IMR 4227	20.0	1960	24.0	2197

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 2079 F.P.S.

154 Grain Cast (w/Gas Check)
BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1488	15.0	1877
2400	16.0	1694	19.0	1919
IMR 4227	19.0	1831	23.0	2066

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1831 F.P.S.

168 Grain Cast (w/Gas Check)
BULLET #287308 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1346	14.0	1758
2400	14.0	1501	18.0	1800
IMR 4227	18.0	1726	22.0	1945

Accuracy Load:
2400 Powder, 18.0 Grains, 1800 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.284 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .284″
Maximum Case Length ..... 2.170″
Trim-to Length ..... 2.160″
Maximum Overall Length (w/Bullet) 2.800″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Winchester 88
Barrel Length ..... 22″ Twist ..... 1-10″

Maximum loads for individual rifles seem to vary quite a bit in this caliber. We recommend that maximum loadings be approached with caution.

Dupont's I.M.R. 4350 powder gave us our best test results. This powder proved to be superior to others in this cartridge and gave excellent accuracy.

.284 WINCHESTER Cont'd. Next Page

.284 WINCHESTER Continued

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2645	45.0	2932
IMR 4895	42.0	2544	47.0	2890
IMR 4064	44.0	2660	49.0	3003
IMR 4320	44.0	2610	49.0	2967
IMR 4350	51.0	2710	57.0*	3076
H 380	47.0	2590	53.0	2932
4831	53.0	2557	59.0*	2949

Accuracy Load:
IMR 4350 Powder, 51.0 Grains, 2710 F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2525	44.5	2793
IMR 4895	41.0	2427	46.0	2785
IMR 4064	42.0	2506	47.5	2832
IMR 4320	42.0	2444	47.5	2777
IMR 4350	50.0	2617	55.0*	2906
H 380	47.0	2551	52.0	2792
4831	52.0	2444	58.0*	2793

Accuracy Load:
IMR 4350 Powder, 50.0 Grains, 2617 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2298	41.0	2518
IMR 4895	40.0	2403	45.0	2672
IMR 4064	41.0	2487	46.0	2762
IMR 4320	41.0	2386	46.0	2666
IMR 4350	49.0	2610	54.0*	2816
H 380	46.0	2518	51.0	2739
4831	51.0	2439	57.0*	2724

Accuracy Load:
IMR 4350 Powder, 53.5* Grains, 2770 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 53.6* Grains, 2793 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2178	40.0	2409
IMR 4895	40.0	2309	44.0	2551
IMR 4064	40.0	2325	45.0	2610
IMR 4320	40.0	2262	45.5	2590
IMR 4350	48.0	2518	53.0*	2717
H 380	45.0	2403	50.0	2652
4831	50.0	2320	55.0*	2590

Accuracy Load:
IMR 4350 Powder, 50.5 Grains, 2625 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2053	38.0	2298
IMR 4895	38.0	2136	42.0	2380
IMR 4064	39.0	2207	43.0	2427
IMR 4320	39.0	2173	43.0	2403
IMR 4350	46.0	2341	51.0	2604
H 380	44.0	2309	48.0	2512
4831	48.0	2192	53.0*	2427

Accuracy Load:
IMR 4350 Powder, 46.0 Grains, 2341 F.P.S.

123 Grain Cast (w/Gas Check)

BULLET #287448 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1599	17.0	2079
2400	16.0	1607	21.0	1968
IMR 4227	17.0	1589	21.0	1818

Accuracy Load:
IMR 4227 Powder, 17.0 Grains, 1589 F.P.S.

139 Grain Cast (w/Gas Check)

BULLET #287346 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1533	16.0	1908
2400	17.0	1612	21.0	1893
IMR 4227	19.0	1691	24.0	1996

Accuracy Load:
Unique Powder, 16.0 Grains, 1908 F.P.S.

154 Grain Cast (w/Gas Check)

BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1468	16.0	1828
2400	17.0	1519	20.0	1742
IMR 4227	19.0	1461	23.0	1834

Accuracy Load:
IMR 4227 Powder, 21.0 Grains, 1650 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.280 REMINGTON

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .284″
Maximum Case Length ..... 2.540″
Trim-to Length ..... 2.530″
Maximum Overall Length (w/Bullet) 3.330″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Remington 700
Barrel Length ..... 22″ Twist ..... 1-9½″

This cartridge gave very uniform velocities and excellent accuracy with all the powders and bullets tested. Duponts I.M.R. 4350 powder had perhaps a small edge over all others as far as accuracy was concerned. Strangely enough the 150 grain factory load produced less velocity than the 165 grain factory load.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2717	45.0	2906
IMR 4895	42.0	2631	47.0	2915
IMR 4064	44.0	2680	49.0	2976
IMR 4320	44.0	2680	49.0	2976
IMR 4350	51.0	2747	57.0*	3144
Rx 21	47.0	2666	52.0*	2923
Ball C²	42.0	2645	48.0	2949
H 380	49.0	2754	54.0	3039
4831	53.0	2597	59.0*	3003

Accuracy Load:
IMR 4350 Powder, 56.0 Grains, 3080* F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2577	45.0	2801
IMR 4895	42.0	2531	47.0	2808
IMR 4064	43.0	2531	48.5	2857
IMR 4320	43.0	2531	48.5	2832
IMR 4350	50.0	2624	56.0*	3003
Rx 21	46.0	2525	51.0	2777
Ball C²	42.0	2518	47.0	2724
H 380	48.0	2645	53.0	2890
4831	52.0	2518	58.0*	2873

Accuracy Load:
4831 Powder, 52.0 Grains, 2518 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2577	45.0	2785
IMR 4895	42.0	2544	47.0	2793
IMR 4064	43.0	2551	48.0	2840
IMR 4320	43.0	2551	48.0	2793
IMR 4350	50.0	2638	55.5	2932
Rx 21	45.0	2439	50.0	2702
Ball C²	41.0	2444	46.0	2680
H380	47.0	2551	52.0	2808
4831	51.0	2550	57.0*	2816

Accuracy Load:
IMR 4350 Powder, 52.0 Grains, 2750 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 51.0 Grains, 2695 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2320	42.0	2525
IMR 4895	40.0	2320	45.5	2652
IMR 4064	41.0	2336	46.0	2638
IMR 4320	41.0	2352	46.5	2659
IMR 4350	49.0	2538	54.0	2801
Rx 21	45.0	2375	50.0	2638
Ball C²	40.0	2309	44.0	2500
H 380	46.0	2427	51.0	2702
4831	50.0	2347	56.0	2695

Accuracy Load:
IMR 4350 Powder, 53.0 Grains, 2754 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 52.5 Grains, 2732 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2145	39.0	2331
IMR 4895	39.0	2232	43.0	2444
IMR 4064	40.0	2252	44.0	2463
IMR 4320	40.0	2257	44.0	2457
IMR 4350	47.0	2398	52.0	2672
Rx 21	43.0	2277	48.0	2512
Ball C²	39.0	2232	43.0	2398
H 380	44.0	2283	49.0	2564
4831	48.0	2212	53.0	2518

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2398 F.P.S.

139 Grain Cast (w/Gas Check)

BULLET #287346 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1529	16.0	1912
2400	17.0	1675	21.0	1953
IMR 4227	19.0	1715	24.0	2028

Accuracy Load:
Unique Powder, 16.0 Grains, 1912 F.P.S.

.280 REMINGTON Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

154 Grain Cast (w/Gas Check)
BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1485	16.0	1841
2400	17.0	1639	20.0	1811
IMR 4227	19.0	1683	23.0	1923

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1683 F.P.S.

168 Grain Cast (w/Gas Check)
BULLET #287308 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1336	15.0	1715
2400	16.0	1501	19.0	1685
IMR 4227	18.0	1543	22.0	1792

Accuracy Load:
Unique Powder, 15.0 Grains, 1715 F.P.S.

7 x 61mm SHARPE & HART

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .284″
Maximum Case Length ..... 2.402″
Trim-to Length ..... 2.392″
Maximum Overall Length (w/Bullet) 3.190″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 13
Firearm used for Test: Shultz & Larsen 65DL
Barrel Length ..... 24″ Twist ..... 1-10″

The 7 x 61 M/M proved to be one of the most efficient cartridges we tested. Accuracy was good and velocities were extremely uniform. Compared to other magnum cases, this cartridge produced very high velocities with minimum amounts of powder. The rifle used for testing was free-bored. For rifles which do not have a free-bored throat, this data should be reduced a full 5%. Even then, maximum loading should be approached with caution.

The Remington 9½ primer was used in our test loads.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	51.0	2890	57.0	3300
IMR 4320	52.0	2941	58.0	3345
IMR 4350	58.0	2985	65.0*	3356
H 380	56.0	3003	62.0	3236
H 450	62.0	2958	69.0*	3279
4831	60.0	2824	67.5*	3095

Accuracy Load:
IMR 4350 Powder, 65.0* Grains, 3356 F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	50.0	2747	56.0	3134
IMR 4320	51.0	2840	57.0	3174
IMR 4350	58.0	2949	64.0*	3257
H 380	55.0	2873	61.0	3095
H 450	61.0	2851	68.0*	3154
4831	60.0	2793	67.5*	3115

Accuracy Load:
IMR 4350 Powder, 58.0 Grains, 2949 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	50.0	2732	55.0	3030
IMR 4320	51.0	2824	56.0	3095
IMR 4350	57.0	2865	63.0*	3144
H 380	54.0	2777	60.0	3030
H 450	60.0	2793	67.0*	3076
4831	60.0	2785	67.5*	3095

Accuracy Load:
IMR 4350 Powder, 57.0 Grains, 2865 F.P.S.

7 x 61mm SHARPE & HART Cont'd. Next Page

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	49.0	2638	54.0	2881
IMR 4320	50.0	2695	55.0	2941
IMR 4350	56.0	2754	62.0*	3039
H 380	53.0	2666	59.0	2915
H 450	59.0	2680	66.0	2958
4831	60.0	2754	67.0*	3021

Accuracy Load:
IMR 4350 Powder, 56.0 Grains, 2754 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	48.0	2544	53.0	2808
IMR 4320	49.0	2617	54.0	2840
IMR 4350	55.0	2659	61.0*	2941
H 380	52.0	2583	58.0	2824
H 450	58.0	2577	64.0	2849
4831	59.0	2672	65.0*	2898

Accuracy Load:
IMR 4350 Powder, 55.0 Grains, 2659 F.P.S.

139 Grain Cast (w/Gas Check)
BULLET #287346 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1805	18.0	2016
2400	18.0	1658	24.0	2070
IMR 4227	22.0	1828	26.0	2092

Accuracy Load:
Unique Powder, 15.0 Grains, 1805 F.P.S.

154 Grain Cast (w/Gas Check)
BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1683	17.0	1876
2400	17.0	1564	23.0	2008
IMR 4227	22.0	1811	25.0	1988

Accuracy Load:
Unique Powder, 14.0 Grains, 1683 F.P.S.

168 Grain Cast (w/Gas Check)
BULLET #287308 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1557	16.0	1754
2400	16.0	1508	22.0	1858
IMR 4227	20.0	1655	24.0	1872

Accuracy Load:
Unique Powder, 13.0 Grains, 1557 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7mm REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .284″
Maximum Case Length ..... 2.500″
Trim-to Length ..... 2.490″
Maximum Overall Length (w/Bullet) 3.290″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Savage 110
Barrel Length ..... 24″ Twist ..... 1-9½″

Dupont's I.M.R. 4064, I.M.R. 4320 and I.M.R. 4350 powders gave excellent accuracy with all of the jacketed bullets tested. Hodgdon's 4831 gave good accuracy with both 165 grain and 175 grain jacketed bullets. The Remington 9½M primer was used for all jacketed loads. Either magnum or standard large rifle primers are suitable with jacketed bullets. For cast bullet loads use only **standard** large rifle primers.

7mm REMINGTON MAGNUM Cont'd. Next Page

7mm REMINGTON MAGNUM Continued

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	49.0	2967	54.0	3164
IMR 4895	52.0	2994	58.0	3225
IMR 4064	53.0	3021	59.0	3236
IMR 4320	54.0	3048	60.0	3279
IMR 4350	62.0	3144	69.0	3390
Rx 21	53.0	3021	59.0	3174
H 380	57.0	2949	63.0	3268
H 450	64.0	2881	71.0	3215
4831	68.0	3105	75.0	3460

Accuracy Load:
IMR 4350 Powder, 69.0 Grains, 3390 F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	48.0	2747	53.0	2949
IMR 4895	51.0	2777	57.0	3048
IMR 4064	52.0	2801	58.0	3067
IMR 4320	53.0	2849	59.0	3095
IMR 4350	61.0	2949	68.0	3279
Rx 21	52.0	2724	58.0	2881
H 380	55.0	2785	61.0	2994
H 450	62.0	2739	69.0	3076
4831	66.0	2941	73.0	3333

Accuracy Load:
IMR 4350 Powder, 68.0 Grains, 3279 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	47.0	2695	52.5	2890
IMR 4895	50.0	2688	56.0	2949
IMR 4064	51.0	2702	57.0	2976
IMR 4320	52.0	2770	58.0	3012
IMR 4350	60.0	2865	67.0	3194
Rx 21	51.0	2518	57.0	2770
H 380	53.0	2680	59.0	2967
H 450	61.0	2688	68.0	3003
4831	65.0	2865	72.0	3205

Accuracy Load:
IMR 4350 Powder, 60.0 Grains, 2865 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 64.1 Grains, 3058 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	46.0	2544	51.5	2747
IMR 4895	50.0	2604	55.0	2824
IMR 4064	50.0	2577	55.5	2808
IMR 4320	51.0	2645	57.0	2865
IMR 4350	59.0	2739	65.0	3012
Rx 21	50.0	2364	55.5	2583
H 380	51.0	2493	57.0	2747
H 450	60.0	2597	67.0	2923
4831	64.0	2777	71.0	3095

Accuracy Load:
IMR 4350 Powder, 60.0 Grains, 2779 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	46.0	2475	51.0	2672
IMR 4895	49.0	2525	54.0	2732
IMR 4064	49.0	2500	54.5	2732
IMR 4320	50.0	2557	56.0	2785
IMR 4350	57.0	2617	63.0	2890
Rx 21	49.0	2320	54.5	2512
H 380	50.0	2433	56.0	2688
H 450	59.0	2512	66.0	2832
4831	63.0	2710	70.0	3030

Accuracy Load:
4831 Powder, 67.0 Grains, 2890 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 63.0 Grains, 2890 F.P.S.

139 Grain Cast (w/Gas Check)
BULLET #287346 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1766	18.0	1960
2400	18.0	1686	24.0	2016
IMR 4227	22.0	1773	26.0	2049

Accuracy Load:
Unique Powder, 15.0 Grains, 1766 F.P.S.

154 Grain Cast (w/Gas Check)
BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1630	17.0	1828
2400	17.0	1557	23.0	1904
IMR 4227	21.0	1694	25.0	1915

Accuracy Load:
Unique Powder, 14.0 Grains, 1630 F.P.S.

168 Grain Cast (w/Gas Check)
BULLET #287308 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1486	16.0	1680
2400	16.0	1403	22.0	1724
IMR 4227	20.0	1547	24.0	1763

Accuracy Load:
Unique Powder, 16.0 Grains, 1680 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7mm WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .284″
Maximum Case Length ..... 2.550″
Trim-to Length ..... 2.540″
Maximum Overall Length (w/Bullet) 3.260″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test .. Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-12″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only**. The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby, Inc. for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Only standard large rifle primers should be used with cast bullet loads.

120 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	56.0	2949	62.0	3311
IMR 4320	57.0	3115	63.0	3345
IMR 4350	64.0	2985	71.0	3448
H 380	58.0	2932	66.0	3290
H 450	69.0	3086	76.0	3460
4831	70.0	3144	77.0	3546

Accuracy Load:
IMR 4064 Powder, 62.0 Grains, 3311 F.P.S.

139 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	55.0	2816	61.0	3134
IMR 4320	56.0	2881	62.0	3194
IMR 4350	63.0	2915	69.0	3260
H 380	59.0	2832	65.0	3154
H 450	68.0	2976	75.0	3322
4831	69.0	3003	75.0	3340

Accuracy Load:
IMR 4350 Powder, 63.0 Grains, 2915 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 67.3 Grains, 3184 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	54.0	2762	60.0	3048
IMR 4320	55.0	2857	61.0	3105
IMR 4350	61.0	2849	68.0	3225
H 380	58.0	2824	64.0	3115
H 450	66.0	2857	73.0	3225
4831	67.0	2949	74.0*	3300

Accuracy Load:
IMR 4350 Powder, 61.0 Grains, 2849 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	52.0	2604	58.0	2890
IMR 4320	54.0	2739	60.0	2994
IMR 4350	60.0	2732	66.0	3020
H 380	57.0	2710	63.0	2941
H 450	64.0	2695	71.0	3039
4831	65.0	2777	72.0	3144

Accuracy Load:
4831 Powder, 72.0 Grains, 3144 F.P.S.

175 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	51.0	2531	56.0	2732
IMR 4320	53.0	2652	59.0	2873
IMR 4350	59.0	2659	65.0	2949
H 380	56.0	2672	62.0	2801
H 450	63.0	2631	70.0	2976
4831	64.0	2695	70.0	2975

Accuracy Load:
4831 Powder, 64.0 Grains, 2695 F.P.S.

154 Grain Cast (w/Gas Check)

BULLET #287405 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1683	18.0	1872
2400	18.0	1559	24.0	1930
IMR 4227	23.0	1760	26.0	1930

Accuracy Load:
IMR 4227 Powder, 23.0 Grains, 1760 F.P.S.

7mm WEATHERBY Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

168 Grain Cast (w/Gas Check)
BULLET #287308 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1572	17.0	1763
2400	17.0	1501	23.0	1828
IMR 4227	22.0	1686	25.0	1838

Accuracy Load:
IMR 4227 Powder, 25.0 Grains, 1838 F.P.S.

179 Grain Cast (w/Gas Check)
BULLET #287221 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1481	16.0	1674
2400	16.0	1412	22.0	1763
IMR 4227	21.0	1592	24.0	1742

Accuracy Load:
Unique Powder, 16.0 Grains, 1674 F.P.S.

7.35mm ITALIAN
(TERNI)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .298" & .300"
Bullet Dia. Cast ..... .299" & .301"
Maximum Case Length ..... 2.01"
Trim-to Length ..... 2.00"
Maximum Overall Length (w/Bullet) 2.755"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 28

Firearm used for Test:
Italian Military Carbine
Barrel Length ..... 21" Twist ..... Gain

Here again a large variation in groove diameters exist. Match the bullet diameter as closely as possible to the groove diameter. Speer jacketed bullets are .298" diameter (150 grs.) and the Hornady bullets are .300" diameter (128 grs.). Lead bullets can be sized .299" or .301". Most actual groove diameters run between .300" and .302". Due to the relatively poor design and workmanship of these rifles, we do not recommend their use except for lead bullet shooting.

128 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	31.0	2463	35.0	2710
IMR 3031	34.0	2364	38.0	2672
IMR 4895	36.0	2415	40.0	2604
IMR 4064	36.0	2272	40.0	2544
IMR 4320	38.0	2409	42.0	2680
Ball C2	38.0	2403	41.0	2487
H 380	41.0	2369	45.0	2583

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	29.0	2188	33.0	2506
IMR 3031	33.0	2298	37.0	2557
IMR 4895	35.0	2257	39.0	2557
IMR 4064	35.0	2222	39.0	2469
IMR 4320	37.0	2352	41.0	2577
Ball C2	36.0	2222	40.0	2427
H 380	39.0	2242	43.0	2439

Accuracy Load:
H 380 Powder, 39.0 Grains, 2242 F.P.S.

150 Grain Cast (w/Gas Check)
BULLET #300136 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	16.0	1650	22.0	2070
IMR 4227	16.0	1535	25.0	2136
IMR 4198	19.0	1595	30.0	2262
IMR 3031	24.0	1625	33.0	2247

Accuracy Load:
IMR 4227 Powder, 25.0 Grains, 2136 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

30 MI CARBINE

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 1.290″
Trim-to Length ..... 1.286″
Maximum Overall Length (w/Bullet) 1.680″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 19
Firearm used for Test ..... M. I. Carbine
Barrel Length .....18″ Twist ..... 1-20″

As this cartridge headspaces on the case mouth, case length is critical. Never trim cases shorter than the Trim-to-Length listed and do not crimp-in the bullet.

Our best test results with jacketed bullets was obtained with the Remington 93 grain (full metal case) 30 Luger bullet used with Dupont I.M.R. 4227 powder. The accuracy of this load was acceptable but not good.

Our best test accuracy was experienced with cast bullets using 2400 powder. While these loads proved very accurate for the rifle, they did not always function the action. For best overall results (functioning of action and accuracy) we suggest the 131 grain cast bullet with AL8 powder.

93 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	13.0	1824	15.0	2094
IMR 4227	14.0	1792	16.5*	2087
AL 8	11.0	1805	13.5*	2105

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	1666	14.5*	1988
IMR 4227	14.0	1760	15.0*	1868
AL 8	11.0	1760	13.0*	1968

Factory Duplication Load:
2400 Powder, 14.2* Grains, 1953 F.P.S.

118 Grain Cast (w/Gas Check)

BULLET #311359 (#2 ALLOY)
CAN ALSO USE BULLET
#311316 (115 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	11.0	1592	13.7	1884
IMR 4227	12.5	1612	14.5*	1814
AL 8	10.5	1685	12.0*	1815

Accuracy Load:
2400 Powder, 13.7 Grains, 1884 F.P.S.

131 Grain Cast

BULLET #311410 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	10.0	1476	12.5	1798
IMR 4227	11.5	1510	13.0	2024
AL 8	9.5	1552	11.0	1730

Accuracy Load:
2400 Powder, 12.5 Grains, 1798 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

30 REMINGTON

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast .307″ & .308″
Maximum Case Length ..... 2.050″
Trim-to Length ..... 2.040″
Maximum Overall Length (w/Bullet) 2.525″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 15
Firearm used for Test ..... Remington 81
Barrel Length ..... 22″ Twist ..... 1-12″

Groove diameters of rifles in this caliber may run a bit tight, (as small as .306 dia). However bullets of .307 or .308 diameter may be used with all listed loads.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2364	35.0*	2500
IMR 4895	35.0	2364	39.0*	2652
IMR 4064	34.0	2183	38.0*	2557
IMR 4320	34.0	2222	38.0*	2487
IMR 4350	38.0	2118	40.5*	2277
H 380	38.0	2262	42.0*	2427

Accuracy Load:
IMR 4895 Powder, 35.0 Grains, 2364 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2123	33.0*	2364
IMR 4895	31.0	2066	35.5*	2352
IMR 4064	32.0	2061	36.0*	2183
IMR 4320	32.0	2207	36.0*	2320
IMR 4350	36.0	1980	40.0*	2232
H 380	35.0	1964	39.5*	2188

Accuracy Load:
IMR 3031 Powder, 33.0 Grains, 2364 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	27.0	1893	30.0*	2114
IMR 4895	30.0	1945	33.0*	2145
IMR 4064	29.0	1845	32.0*	2049
IMR 4320	29.0	1941	32.0*	2036
IMR 4350	32.0	1661	36.0*	1953
H 380	33.0	1818	37.0*	2020

Accuracy Load:
IMR 4895 Powder, 32.0 Grains, 2096 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 32.2 Grains, 2105 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	16.0	1730	20.0	2000
IMR 4227	17.5	1754	22.0	2024
IMR 4198	19.0	1697	25.5	2118

Accuracy Load:
IMR 4198 Powder, 23.5 Grains, 1984 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 25.0 Grains, 2105 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

303 SAVAGE

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.015″
Trim-to Length ..... 2.010″
Maximum Overall Length (w/Bullet) 2.520″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 7
Firearm used for Test ..... Savage 99
Barrel Length ..... 26″ Twist ..... 1-12″

The rifles chambered for this cartridge which we have tested, show no appreciable variation in standard (.308) groove diameter. Our consumer correspondence, however, indicates that some grooves may run a little on the large size. We suggest that you slug your barrel before reloading. Commercial jacketed bullets larger than .308 are not recommended for use with this cartridge. If your barrel requires a bullet larger than .308 diameter, we suggest the use of a cast bullet which is sized to meet your needs.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2314	35.0	2570
IMR 4895	35.0	2341	38.0*	2564
IMR 4064	34.0	2183	38.0*	2469
IMR 4320	34.0	2222	38.0*	2493

Accuracy Load:
IMR 4320 Powder, 38.0* Grains, 2493 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2169	33.0	2392
IMR 4895	33.0	2202	36.0*	2392
IMR 4064	32.0	2123	36.0*	2403
IMR 4320	32.0	2105	36.0*	2444

Accuracy Load:
IMR 4895 Powder, 33.0 Grains, 2202 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	28.0	1949	31.0	2173
IMR 4895	30.0	1949	33.0*	2136
IMR 4064	30.0	1930	33.0*	2132
IMR 4320	30.0	1886	33.0	2105

Accuracy Load:
IMR 3031 Powder, 28.0 Grains, 1949 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1326	11.0	1930
2400	15.0	1625	20.0	1980
IMR 4227	16.0	1618	22.0	2008

Accuracy Load:
2400 Powder, 20.0 Grains, 1980 F.P.S.

193 Grain Cast (w/Gas Check)

BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1273	10.0	1413
2400	14.0	1411	19.0	1811
IMR 4227	16.0	1492	22.5	1934

Accuracy Load:
2400 Powder, 19.0 Grains, 1811 F.P.S.

Factory Duplication Load:
IMR 4227 Powder, 22.5 Grains, 1934 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

30/30 WINCHESTER

(7.62 x 51R mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.0395″
Trim-to Length ..... 2.028″
Maximum Overall Length (w/Bullet) 2.550″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 6
Firearm used for Test ..... Stevens 325
Barrel Length ..... 21″ Twist ..... 1-12″

Use only blunt or round nose bullets in 30/30 rifles which have tubular magazines. This is important, for a pointed bullet could accidentally chain-fire the magazine when the rifle is under recoil. You should also crimp the bullet in place to prevent it from being pushed back into the case.

Some of the older rifles chambered for this cartridge are marked 30 W.C.F. This is an old designation for the ever popular 30/30 cartridge.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	2262	35.0*	2518
IMR 4064	34.0	2227	38.0*	2525
IMR 4320	34.0	2232	38.0*	2475
IMR 4895	35.0	2352	39.0*	2645
IMR 4350	36.0	1937	40.5*	2247
Rx 11	35.0	2257	40.0*	2631
Ball C2	35.0	2288	39.0	2538
H 380	38.0	2283	42.0*	2457

Accuracy Load:
IMR 3031 Powder, 34.0 Grains, 2435 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	30.0	2096	33.5*	2347
IMR 4064	32.0	2132	36.5*	2415
IMR 4320	32.0	2079	36.5*	2358
IMR 4895	33.0	2183	36.0*	2380
IMR 4350	36.0	1980	40.5*	2272
Rx 11	31.0	2114	35.0	2386
Ball C2	33.0	2105	37.0	2352
H 380	36.0	2040	40.0*	2237

Accuracy Load:
IMR 4064 Powder, 36.5* Grains, 2447 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 35.0 Grains, 2325 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	28.0	1923	31.0*	2145
IMR 4064	30.0	1980	33.0*	2145
IMR 4320	30.0	1912	33.0*	2096
IMR 4895	31.0	2044	34.5*	2258
IMR 4350	33.0	1754	37.5*	2032
Rx 11	30.0	2136	32.0*	2240
Ball C2	31.0	1968	34.0	2183
H 380	34.0	1912	38.0*	2096

Accuracy Load:
IMR 4064 Powder, 30.0 Grains, 1980 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 33.8 Grains, 2217 F.P.S.

131 Grain Cast

BULLET #311410 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1584	12.0	1897
2400	16.0	1780	21.0	2173
IMR 4227	16.0	1615	22.0	2079
IMR 4198	19.0	1658	27.0	2260
IMR 3031	20.0	1490	34.0	2427

Accuracy Load:
Unique Powder, 12.0 Grains, 1897 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1370	11.0	1669
2400	16.0	1700	21.0	2103
IMR 4227	16.0	1555	23.0	2136
IMR 4198	19.0	1615	27.0	2217
IMR 3031	20.0	1400	33.5	2415

Accuracy Load:
Unique Powder, 11.0 Grains, 1669 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 32.3 Grains, 2325 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1160	11.0	1610
2400	15.0	1633	21.0	2053
IMR 4227	16.0	1560	23.0	2040
IMR 4198	19.0	1599	25.0	2079
IMR 3031	22.0	1597	31.0	2227

Accuracy Load:
IMR 4227 Powder, 23.0 Grains, 2040 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 30.9 Grains, 2217 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.300 SAVAGE

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 1.871″
Trim-to Length ..... 1.865″
Maximum Overall Length (w/Bullet) 2.600″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Savage 99
Barrel Length ..... 22″ Twist ..... 1-12″

Our best test results with jacketed bullets were obtained with bullets of 150 grains. All of Dupont I.M.R. powders listed for this cartridge gave excellent accuracy and uniform velocities with this bullet weight.

Best cast bullet results were obtained with the 173 grain cast bullet.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2672	42.0	2967
IMR 4895	41.0	2659	45.0*	2967
IMR 4064	41.0	2624	45.0*	2890
IMR 4320	42.0	2702	47.0*	3021
Ball C2	41.0	2695	45.0	2857
H 380	41.0	2409	46.5*	2645
Rx 11	38.0	2624	42.0*	2849

Accuracy Load:
IMR 4320 Powder, 46.0* Grains, 2960 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2525	41.0	2808
IMR 4895	40.0	2564	44.0*	2801
IMR 4064	40.0	2493	44.0*	2754
IMR 4320	41.0	2544	46.0*	2857
Ball C2	40.0	2512	44.0	2672
H 380	41.0	2320	46.5*	2538
Rx 11	37.0	2444	41.0	2680

Accuracy Load:
IMR 4320 Powder, 46.0* Grains, 2857 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2433	40.0*	2695
IMR 4895	37.0	2325	41.5*	2652
IMR 4064	39.0	2439	43.0*	2666
IMR 4320	40.0	2481	43.5*	2672
Ball C2	39.0	2358	43.0	2577
H 380	41.0	2242	46.5*	2487
Rx 11	35.0	2369	39.5	2645

Accuracy Load:
IMR 4320 Powder, 42.0 Grains, 2590 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 43.2 Grains, 2659 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	2145	37.0*	2369
IMR 4895	36.0	2197	40.0*	2427
IMR 4064	36.0	2159	40.0*	2375
IMR 4320	37.0	2192	41.0*	2439
Ball C2	36.0	2105	40.0	2325
H 380	40.0	2132	45.0*	2336
Rx 11	31.0	2066	35.0	2262

Accuracy Load:
IMR 4895 Powder, 38.0 Grains, 2315 F.P.S.

Factory Duplication Load:
IMR 4320 Powder, 39.4 Grains, 2336 F.P.S.

118 Grain Cast (w/Gas Check)

BULLET #311359 (#2 ALLOY)
CAN ALSO USE BULLET
#311316 (115 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1599	13.0	1976
2400	16.0	1800	19.0	2012
IMR 4227	18.0	1805	22.0	2074
IMR 4198	21.0	1851	25.0	2087

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1412	13.0	1773
2400	18.0	1732	22.0	1976
IMR 4227	18.0	1572	23.0	1926
IMR 4198	24.0	1861	27.0	2070

Accuracy Load:
2400 Powder, 20.0 Grains, 1850 F.P.S.

.300 SAVAGE Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)

CAN ALSO USE BULLET #31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1362	12.0	1628
2400	17.0	1600	21.0	1908
IMR 4227	17.0	1497	22.0	1868
IMR 4198	22.0	1691	26.0	2000

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1868 F.P.S.

183 Grain Cast (w/Gas Check)

BULLET #311407 (#2 ALLOY)

CAN ALSO USE BULLET #311332 (183 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1252	11.0	1508
2400	16.0	1515	20.0	1805
IMR 4227	16.0	1457	21.0	1706
IMR 4198	21.0	1655	25.0	1901

Accuracy Load:
IMR 4227 Powder, 21.0 Grains, 1706 F.P.S.

.308 WINCHESTER

(7.62 x 51mm NATO)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.015″
Trim-to Length ..... 2.005″
Maximum Overall Length (w/Bullet) 2.800″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Winchester 70
Barrel Length ..... 22″ Twist ..... 1-12″

The 308 Winchester cartridge proved to be extremely accurate in our testing. Duponts I.M.R. Series powders gave uniform velocities and good accuracy with all of the bullet weights tested.

The 173 grain cast bullet gave exceptionally fine accuracy with I.M.R. 4227 powder.

Caution — If military cases are used, maximum loads should be reduced by 2 grains.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	43.0	2873	48.5*	3205
IMR 4895	45.0	2747	50.5*	3105
IMR 4064	43.0	2544	48.5*	2949
IMR 4320	46.0	2754	51.0*	3105
IMR 4350	45.0	2262	50.0*	2544
Rx 11	43.0	2702	48.0*	3003
Ball C2	46.0	2717	51.5	3105
H 335	46.0	2754	51.5	3115
H 380	46.0	2551	51.5*	2770

Accuracy Load:
IMR 4895 Powder, 50.5* Grains, 3105 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 47.3* Grains, 3154 F.P.S.

125 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2659	46.5*	3076
IMR 4895	43.0	2624	48.0*	2976
IMR 4064	43.0	2652	48.5*	2958
IMR 4320	46.0	2754	51.0*	3067
IMR 4350	45.0	2293	50.0*	2538
Rx 11	41.0	2659	46.0*	2832
Ball C2	44.0	2583	49.0	2898
H 335	44.0	2762	49.0	3012
H 380	46.0	2583	51.5*	2762

Accuracy Load:
IMR 3031 Powder, 45.3* Grains, 3039 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 45.2* Grains, 3030 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2590	44.5*	2881
IMR 4895	41.0	2481	45.0*	2732
IMR 4064	43.0	2617	48.5*	2890
IMR 4320	43.0	2557	48.5*	2857
IMR 4330	45.0	2331	50.0*	2577
Rx 11	40.0	2469	44.0*	2659
Ball C2	42.0	2415	47.0	2739
H 335	42.0	2487	47.0	2801
H 380	45.0	2439	50.0*	2597

Accuracy Load:
IMR 3031 Powder, 44.0* Grains, 2824 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 42.4* Grains, 2785 F.P.S.

.308 WINCHESTER Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.308 WINCHESTER Continued
(7.62 x 51mm NATO)

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2403	42.5*	2710
IMR 4895	39.0	2309	43.5*	2610
IMR 4064	41.0	2450	46.5*	2724
IMR 4320	41.0	2403	46.5*	2710
IMR 4350	45.0	2293	50.0*	2564
Rx 11	38.0	2341	42.0*	2538
Ball C2	41.0	2298	45.0	2583
H 335	41.0	2364	45.0	2672
H 380	44.0	2320	49.0*	2500

Accuracy Load:
IMR 4895 Powder, 43.5* Grains, 2610 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	36.0	2237	40.5*	2506
IMR 4895	38.0	2207	42.5*	2500
IMR 4064	40.0	2325	44.5*	2570
IMR 4320	40.0	2283	44.5*	2557
IMR 4350	45.0	2288	50.0*	2544
Rx 11	36.0	2197	40.0*	2421
Ball C2	39.0	2188	43.0	2457
H 335	39.0	2202	43.0	2475
H 380	42.0	2169	47.0*	2364

Accuracy Load:
IMR 4895 Powder, 41.0 Grains, 2425 F.P.S.

Factory Duplication Load:
IMR 4064 Powder, 43.5* Grains, 2525 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2100	38.0	2325
IMR 4895	37.0	2188	41.0*	2375
IMR 4064	38.0	2178	42.0*	2380
IMR 4320	38.0	2164	42.0*	2375
IMR 4350	44.0	2188	49.0*	2450
Rx 11	34.0	2070	38.0*	2288
Ball C2	37.0	1992	41.5	2304
H 335	37.0	2049	41.5	2375
H 380	41.0	2082	45.0*	2222

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2344 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 48.1 Grains, 2398 F.P.S.

118 Grain Cast (w/Gas Check)
BULLET #311359 (#2 ALLOY)
CAN ALSO USE BULLET
#311316 (115 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1824	15.0	2100
2400	18.0	1890	21.0	2105
IMR 4227	20.0	1883	24.0	2212
IMR 4198	23.0	1915	26.0	2155

Accuracy Load:
IMR 4227 Powder, 20.0 Grains, 1883 F.P.S.

155 Grain Cast
BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1572	14.0	1821
2400	20.0	1845	24.0	2136
IMR 4227	19.0	1686	25.0	2045
IMR 4198	26.0	1934	29.0	2145

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1686 F.P.S.

173 Grain Cast (w/Gas Check)
BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1400	13.0	1669
2400	19.0	1776	23.0	2016
IMR 4227	18.0	1607	24.0	1980
IMR 4198	24.0	1855	28.0	2049

Accuracy Load:
IMR 4227 Powder, 18.0 Grains, 1607 F.P.S.

193 Grain Cast (w/Gas Check)
BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1257	12.0	1506
2400	17.0	1466	21.0	1760
IMR 4198	23.0	1562	26.0	1824

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

30/40 KRAG

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.314″
Trim-to Length ..... 2.304″
Maximum Overall Length (w/Bullet) 3.089″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 7
Firearm used for Test ..... Krag
Barrel Length ..... 22″ Twist ..... 1-10″

Dupont I.M.R. 4350 and Hodgdon's 4831 powders gave the most uniform velocities with the jacketed bullets tested.

Excellent accuracy was obtained with cast bullets of 173 grains and heavier.

Caution — A good many Krag rifles which we have inspected show cracks around the locking lug on the bolt. Have your rifle inspected by a gunsmith before using it.

30/40 KRAG Cont'd. Next Page

30/40 KRAG Continued

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2604	45.0	2849
IMR 4895	42.0	2433	47.0	2793
IMR 4064	42.0	2375	47.0	2695
IMR 4320	43.0	2347	48.5	2762
IMR 4350	48.0	2293	55.0*	2732
H 380	47.0	2403	52.0	2710
4831	51.0	2192	56.0*	2433

Accuracy Load:
IMR 4350 Powder, 53.0 Grains, 2570 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2386	43.0	2680
IMR 4895	42.0	2444	46.0	2659
IMR 4064	41.0	2242	46.5	2631
IMR 4320	42.0	2336	47.0	2638
IMR 4350	47.0	2242	54.0*	2617
H 380	45.0	2304	50.0	2570
4831	51.0	2173	56.0*	2403

Accuracy Load:
IMR 4350 Powder, 52.0 Grains, 2493 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2331	42.0	2557
IMR 4895	41.0	2415	45.0	2590
IMR 4064	41.0	2314	46.0	2564
IMR 4320	41.0	2283	46.0	2570
IMR 4350	47.0	2267	52.0	2538
H 380	44.0	2257	49.0	2531
4831	51.0	2207	56.0*	2415

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2267 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2004	38.0	2257
IMR 4895	38.0	3132	42.0	2375
IMR 4064	38.0	2114	42.0	2304
IMR 4320	39.0	2109	43.0	2331
IMR 4350	44.0	2109	49.0	2386
H 380	41.0	2096	46.0	2336
4831	49.0	2159	54.0*	2347

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2262 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 47.3 Grains, 2288 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	33.0	1897	37.0	2141
IMR 4895	37.0	2032	41.0	2247
IMR 4064	37.0	1937	41.0	2207
IMR 4320	36.0	1934	40.0	2136
IMR 4350	42.0	1968	47.0	2222
H 380	39.0	1976	43.0	2145
4831	47.0	1996	52.0*	2217

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2222 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	1831	36.0	2074
IMR 4895	36.0	1992	40.0	2183
IMR 4064	36.0	1897	40.0	2127
IMR 4320	35.0	1882	39.0	2079
IMR 4350	41.0	1934	45.0	2127
H 380	38.0	1879	42.0	2079
4831	45.0	1879	50.0*	2096

Accuracy Load:
IMR 4350 Powder, 43.0 Grains, 2004 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 43.7 Grains, 2061 F.P.S.

118 Grain Cast (w/Gas Check)

BULLET #311359 (#2 ALLOY)

CAN ALSO USE BULLET #311316 (115 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1492	13.0	1872
2400	19.0	1782	23.0	2061
IMR 4227	20.0	1709	25.0	2061

Accuracy Load:
Unique Powder, 12.0 Grains, 1778 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1381	13.0	1694
2400	19.0	1712	24.0	2036
IMR 4227	19.0	1628	24.0	1934
IMR 4198	24.0	1818	28.0	2032

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1628 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)

CAN ALSO USE BULLET #31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1220	12.0	1562
2400	18.0	1647	23.0	1964
IMR 4227	19.0	1633	24.0	1923
IMR 4198	23.0	1739	27.0	1980

Accuracy Load:
2400 Powder, 18.0 Grains, 1647 F.P.S.

30/40 KRAG Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

183 Grain Cast (w/Gas Check)

BULLET #311407 (#2 ALLOY)

CAN ALSO USE BULLET #311332 (183 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1204	11.0	1445
2400	17.0	1547	22.0	1854
IMR 4227	18.0	1549	23.0	1808
IMR 4198	22.0	1700	26.0	1901

Accuracy Load:
IMR 4198 Powder, 26.0 Grains, 1901 F.P.S.

213 Grain Cast (w/Gas Check)

BULLET #311290 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1138	11.0	1355
2400	16.0	1415	21.0	1716
IMR 4227	17.0	1413	22.0	1689
IMR 4198	21.0	1554	25.0	1769

Accuracy Load:
IMR 4198 Powder, 25.0 Grains, 1769 F.P.S.

30/06

(7.62 x 63mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308
Maximum Case Length 2.494
Trim-to Length 2.484
Maximum Overall Length (with Bullet) 3.340
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Savage 110
Barrel Length ..... 22" Twist ..... 1-10"

In working for accuracy with this cartridge, the 110 grain jacketed bullet gave rather poor results. We suggest that the 130 grain jacketed bullet be used for varmint.

Best lead bullet accuracy occurred with bullets of 150 grains or heavier and with Unique, 2400 and IMR 4227 powders. Lead bullet velocities of approximately 1800 F.P.S. produced the most consistent groups. Lyman cast bullet #311291 (173 grs) gave exceptionally good results.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	47.0	3039	52.0	3345
IMR 4895	49.0	2967	54.5	3311
IMR 4064	50.0	2994	55.5	3378
IMR 4320	50.0	2898	56.5	3311
IMR 4350	56.0	2929	62.5*	3279
Ball C2	51.0	3067	56.0	3322
H 380	53.0	2890	59.0	3154
4831	55.0	2538	61.5*	2881
H 450	60.0	2865	66.0*	3154
Rx 11	47.0	2923	52.0	3100
Rx 21	50.0	2824	55.0	3086

Accuracy Load:
IMR 3031 Powder, 49.0 Grains, 3160 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 49.1 Grains, 3184 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	44.0	2754	49.0	3030
IMR 4895	48.0	2832	53.0	3115
IMR 4064	48.0	2777	53.5	3115
IMR 4320	49.0	2762	54.0	3048
IMR 4350	55.0	2785	61.5*	3144
Ball C2	49.0	2824	54.0	3058
H 380	51.0	2672	57.0	3086
4831	55.0	2469	61.5*	3115
H 450	58.0	2710	64.0*	2958
Rx 11	46.0	2702	51.0	2923
Rx 21	49.0	2717	54.0	2949

Accuracy Load:
IMR 3031 Powder, 48.0 Grains, 2975 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2570	47.0	2793
IMR 4895	46.0	2624	51.5	2941
IMR 4064	47.0	2638	52.0	2923
IMR 4320	47.0	2583	52.5	2873
IMR 4350	55.0	2747	61.0*	3012
Ball C2	46.0	2583	51.0	2793
H 380	50.0	2538	56.0	2840
4831	55.0	2409	61.5*	2717
H 450	57.0	2583	63.0*	2857
Rx 11	45.0	2577	50.0	2777
Rx 21	48.0	2551	53.0	2824

Accuracy Load:
IMR 4895 Powder, 48.0 Grains, 2750 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 57.3 Grains, 2865 F.P.S.

30/06 Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2398	45.5	2688
IMR 4895	44.0	2500	49.0	2732
IMR 4064	45.0	2469	50.0	2754
IMR 4320	45.0	2444	50.0	2702
IMR 4350	53.0	2610	59.0*	2906
Ball C2	44.0	2444	49.0	2680
H 380	50.0	2518	55.0	2739
4831	55.0	2392	61.0*	2666
H 450	56.0	2493	62.0*	2762
Rx 11	42.0	2380	47.0	2597
Rx 21	47.0	2481	52.0	2724

Accuracy Load:
IMR 4064 Powder, 47.5 Grains, 2625 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2341	44.5	2557
IMR 4895	42.0	2328	47.5	2604
IMR 4064	43.0	2341	48.0	2583
IMR 4320	44.0	2364	49.0	2610
IMR 4350	51.0	2487	57.0*	2762
Ball C2	42.0	2288	47.5	2538
H 380	48.0	2386	53.0	2557
4831	54.0	2325	60.0*	2583
H 450	54.0	2403	60.0*	2624
Rx 11	41.0	2272	45.0	2469
Rx 21	46.0	2403	51.0	2638

Accuracy Load:
IMR 4350 Powder, 54.2* Grains, 2652 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 54.2* Grains, 2652 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2217	43.0	2415
IMR 4895	40.0	2169	45.5	2433
IMR 4064	42.0	2192	47.0	2481
IMR 4320	42.0	2202	47.5	2475
IMR 4350	50.0	2409	56.0*	2645
Ball C2	41.0	2155	45.0	2347
H 380	46.0	2207	51.0	2457
4831	53.0	2283	59.0*	2512
H 450	53.0	2293	59.0*	2531
Rx 11	40.0	2145	44.0	2325
Rx 21	44.0	2262	49.5	2481

Accuracy Load:
IMR 4350 Powder, 50.0 Grains, 2409 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2087	42.0	2288
IMR 4895	40.0	2096	44.5	2410
IMR 4064	41.0	2109	46.0	2358
IMR 4320	41.0	2096	46.5	2392
IMR 4350	49.0	2277	54.5*	2531
Ball C2	39.0	2044	43.0	2283
H 380	45.0	2096	50.0	2358
4831	52.0	2145	58.0*	2415
H 450	52.0	2232	58.0*	2469
Rx 11	39.0	2057	43.0	2267
Rx 21	43.0	2217	48.0	2386

Accuracy Load:
IMR 4350 Powder, 50.5 Grains, 2347 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 50.5 Grains, 2347 F.P.S.

118 Grain Cast (w/Gas Check)

BULLET #311359 (#2 ALLOY)
CAN ALSO USE BULLET
#311316 (115 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1945	17.0	2169
2400	24.0	2230	28.0	2463
IMR 4227	23.0	2049	32.0	2570
IMR 4198	25.0	2004	35.0	2538
IMR 3031	30.0	2024	38.0	2450
IMR 4064	32.0	1945	41.0	2375

Accuracy Load:
Unique Powder, 14.0 Grains, 1945 F.P.S.

131 Grain Cast

BULLET #311410 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1775	16.0	1996
2400	23.0	2006	27.0	2272
IMR 4227	22.0	1865	30.0	2377
IMR 4198	24.0	1862	33.0	2369
IMR 3031	29.0	1904	38.0	2347
IMR 4064	32.0	1865	41.0	2277

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1865 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1575	15.0	1788
2400	22.0	1919	26.0	2150
IMR 4227	20.0	1704	28.0	2155
IMR 4198	24.0	1828	31.0	2178
IMR 3031	29.0	1872	38.0	2341
IMR 4064	31.0	1779	41.0	2237

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1816 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1449	14.0	1658
2400	20.0	1750	25.0	2032
IMR 4227	20.0	1683	27.0	2053
IMR 4198	23.0	1751	30.0	2109
IMR 3031	28.0	1831	38.0	2272
IMR 4064	31.0	1734	41.0	2222

Accuracy Load:
2400 Powder, 20.0 Grains, 1750 F.P.S.

183 Grain Cast (w/Gas Check)

BULLET #311407 (#2 ALLOY)
CAN ALSO USE BULLET
#311332 (183 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.5	1360	13.5	1585
2400	19.0	1680	24.0	1955
IMR 4227	19.0	1607	26.0	1995
IMR 4198	22.0	1664	30.0	2083
IMR 3031	27.0	1754	38.0	2272
IMR 4064	30.0	1706	41.0	2257

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1607 F.P.S.

30/06 Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

30/06 Continued
(7.62 x 63mm)

193 Grain Cast (w/Gas Check)
BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.2	1298	13.2	1510
2400	18.0	1535	23.0	1815
IMR 4227	18.0	1464	25.0	1860
IMR 4198	22.0	1545	30.0	1890
IMR 3031	27.0	1680	37.0	2074
IMR 4064	29.0	1438	40.0	2092

Accuracy Load:
2400 Powder, 18.0 Grains, 1535 F.P.S.

213 Grain Cast (w/Gas Check)
BULLET #311290 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1244	13.0	1436
2400	17.0	1450	22.0	1725
IMR 4227	18.0	1436	24.0	1552
IMR 4198	28.0	1543	30.0	1890
IMR 3031	27.0	1602	37.0	2057
IMR 4064	29.0	1572	40.0	2080

Accuracy Load:
IMR 4227 Powder, 24.0 Grains, 1552 F.P.S.

.300 H & H MAGNUM
(7.63 x 72mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.850″
Trim-to Length ..... 2.840″
Maximum Overall Length (w/Bullet) 3.655″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 13
Firearm used for Test ..... Remington 721
Barrel Length ..... 26″ Twist ..... 1-10″

Very uniform velocities and excellent accuracy were the rule throughout our testing of this cartridge. Bullets from 150 grains up to 200 grains produced the best groups.

Our very best results were had when using the Winchester 120 primer.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	58.0	3427	64.0	3708
IMR 4895	61.0	3390	68.0	3731
IMR 4064	61.0	3322	68.0	3708
IMR 4320	63.0	3427	70.0	3773
IMR 4350	72.0	3460	80.0*	3773
H 380	68.0	3390	76.0	3731
4831	73.0	3134	80.0*	3401

Accuracy Load:
IMR 4895 Powder, 61.0 Grains, 3390 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	57.0	3205	63.0	3448
IMR 4895	60.0	3205	67.0	3521
IMR 4064	60.0	3164	67.0	3497
IMR 4320	61.0	3225	68.0	3509
IMR 4350	71.0	3322	77.0	3623
H 380	66.0	3164	73.0	3460
4831	73.0	3058	80.0*	3333

Accuracy Load:
IMR 4064 Powder, 60.0 Grains, 3164 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	55.0	3012	61.0	3215
IMR 4064	59.0	3012	65.0	3268
IMR 4320	59.0	3039	66.5	3322
IMR 4895	60.0	3115	66.5	3390
IMR 4350	67.0	3086	75.0*	3427
H 380	64.0	3003	71.0	3268
4831	72.0	2923	80.0*	3236

Accuracy Load:
IMR 4895 Powder, 60.0 Grains, 3115 F.P.S.

.300 H & H MAGNUM Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.300 H & H MAGNUM Continued
(7.63 x 72mm)

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	52.0	2777	58.0	2994
IMR 4895	56.0	2865	62.0	3095
IMR 4064	56.0	2816	62.0	3076
IMR 4320	57.0	2840	63.0	3095
IMR 4350	63.0	2816	70.0	3144
H 380	61.0	2808	68.0	3105
4831	70.0	2793	77.0*	3095

Factory Duplication Load:
IMR 4350 Powder, 63.0 Grains, 2816 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	50.0	2624	55.0	2808
IMR 4895	53.0	2672	59.5	2923
IMR 4064	54.0	2672	60.0	2941
IMR 4320	55.0	2739	61.0	2949
IMR 4350	60.0	2672	67.0	2985
H 380	59.0	2695	65.0	2923
4831	66.0	2624	73.0*	2949

Accuracy Load:
IMR 4350 Powder, 64.5 Grains, 2849 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 64.8 Grains, 2873 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	48.0	2433	53.5	2652
IMR 4064	52.0	2481	58.0	2724
IMR 4895	52.0	2506	58.0	2754
IMR 4320	53.0	2531	59.5	2793
IMR 4350	59.0	2538	65.0	2808
H 380	57.0	2525	63.0	2777
4831	64.0	2506	71.0	2801

Accuracy Load:
IMR 4350 Powder, 65.0 Grains, 2808 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	47.0	2341	52.5	2557
IMR 4064	50.0	2369	56.5	2631
IMR 4895	51.0	2427	57.5	2710
IMR 4320	52.0	2450	58.5	2724
IMR 4350	57.0	2450	64.0	2732
H 380	56.0	2450	62.0	2698
4831	62.0	2398	69.0	2710

Accuracy Load:
IMR 4350 Powder, 61.0 Grains, 2610 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 59.5 Grains, 2550 F.P.S.

155 Grain Cast (w/Gas Check)
BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1728	18.0	1915
2400	22.0	1821	26.0	2053
IMR 4227	22.0	1736	27.0	2012
IMR 4198	25.0	1801	30.0	2057

Accuracy Load:
Unique Powder, 18.0 Grains, 1915 F.P.S.

173 Grain Cast (w/Gas Check)
BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1605	17.0	1798
2400	20.0	1703	27.0	2057
IMR 4227	20.0	1620	27.0	1988
IMR 4198	24.0	1792	29.0	1996

Accuracy Load:
IMR 4227 Powder, 20.0 Grains, 1620 F.P.S.

193 Grain Cast (w/Gas Check)
BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1585	18.0	1748
2400	23.0	1748	27.0	1937
IMR 4227	24.0	1801	28.0	1858
IMR 4198	24.0	1875	28.0	1827

Accuracy Load:
IMR 4198 Powder, 28.0 Grains, 1827 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.300 WINCHESTER MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.620″
Trim-to Length ..... 2.610″
Maximum Overall Length (w/Bullet) 3.340″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 13
Firearm used for Test ..... Winchester 70
Barrel Length ..... 24″ Twist ..... 1-10″

The Winchester 120 primer gave us our best test results with this cartridge. We, therefore, used this one primer exclusively in working up the listed data. While a magnum primer may be used with this data, the reloader should realize that slight variations in pressure and velocity will occur.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	59.0	3194	66.0	3546
IMR 4895	62.0	3236	69.0	3521
IMR 4064	63.0	3174	70.0	3546
IMR 4320	60.0	3067	68.0	3413
IMR 4350	73.0	3236	81.0*	3677
H 380	67.0	3144	74.0	3460
4831	75.0	3021	83.5*	3367
Rx 11	62.0	3205	69.0	3460
Rx 21	67.0	3205	74.0	3509

Accuracy Load:
IMR 4350 Powder, 77.0 Grains, 3450 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	56.0	2976	63.0	3268
IMR 4895	60.0	2976	67.0	3311
IMR 4064	61.0	2985	68.0	3300
IMR 4320	60.0	3012	65.0	3215
IMR 4350	71.0	3086	79.0*	3497
H 380	65.0	2985	72.0	3215
4831	75.0	2932	83.0*	3290
Rx 11	61.0	3076	67.0	3311
Rx 21	65.0	3067	71.0	3311

Accuracy Load:
IMR 4895 Powder, 60.0 Grains, 2976 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	54.0	2785	60.0	3048
IMR 4895	58.0	2808	65.0	3115
IMR 4064	59.0	2824	65.0	3086
IMR 4320	56.0	2724	62.0	2967
IMR 4350	68.0	2890	76.0	3290
H 380	63.0	2840	70.0	3105
4831	73.0	2793	81.0*	3194
Rx 11	60.0	2865	65.0	3039
Rx 21	63.0	2857	70.0	3134

Accuracy Load:
IMR 4320 Powder, 56.0 Grains, 2724 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 75.0 Grains, 3247 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	52.0	2631	58.0	2852
IMR 4895	56.0	2672	62.0	2906
IMR 4064	58.0	2724	64.0	2967
IMR 4320	55.0	2631	61.0	2832
IMR 4350	67.0	2865	74.0	3194
H 380	62.0	2747	69.0	2976
4831	71.0	2724	79.0*	3086
Rx 11	56.0	2770	62.0	2890
Rx 21	62.0	2824	68.0	3067

Accuracy Load:
IMR 4320 Powder, 55.0 Grains, 2631 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	50.0	2493	56.0	2717
IMR 4895	54.0	2577	60.5	2793
IMR 4064	56.0	2590	62.5	2840
IMR 4320	54.0	2518	60.5	2777
IMR 4350	65.0	2724	72.5	3048
H 380	60.0	2610	67.0	2857
4831	70.0	2666	77.0*	2958
Rx 11	54.0	2570	60.0	2754
Rx 21	60.0	2695	67.0	2967

Accuracy Load:
IMR 4350 Powder, 72.0 Grains, 3030 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 72.5 Grains, 3048 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	49.0	2380	54.0	2564
IMR 4895	52.0	2403	58.0	2631
IMR 4064	53.0	2439	59.0	2624
IMR 4320	51.0	2369	57.0	2544
IMR 4350	62.0	2597	69.0	2849
H 380	58.0	2469	64.0	2659
4831	67.0	2531	74.0*	2816
Rx 11	52.0	2427	58.0	2597
Rx 21	58.0	2551	63.0	2754

Accuracy Load:
IMR 4350 Powder, 62.0 Grains, 2597 F.P.S.

.300 WINCHESTER Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	47.0	2237	52.5	2439
IMR 4895	50.0	2283	55.5	2475
IMR 4064	50.0	2298	56.5	2487
IMR 4320	49.0	2227	54.0	2403
IMR 4350	60.0	2463	67.5	2747
H 380	55.0	2331	61.0	2500
4831	65.0	2415	72.0*	2688
Rx 11	50.0	2309	54.0	2409
Rx 21	55.0	2392	61.0	2604

Accuracy Load:
IMR 4320 Powder, 49.0 Grains, 2227 F.P.S.

155 Grain Cast (w/Gas Check)
BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1657	18.0	1855
2400	23.0	1779	27.0	2004
IMR 4227	24.0	1700	28.0	1953

Accuracy Load:
Unique Powder, 18.0 Grains, 1855 F.P.S.

173 Grain Cast (w/Gas Check)
BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1545	17.0	1733
2400	22.0	1718	26.0	1912
IMR 4227	22.0	1636	27.0	1882

Accuracy Load:
2400 Powder, 22.0 Grains, 1718 F.P.S.

193 Grain Cast
BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1463	16.0	1580
2400	20.0	1517	27.0	1851
IMR 4227	20.0	1436	27.0	1792

Accuracy Load:
2400 Powder, 20.0 Grains, 1517 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.308 NORMA
MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.560″
Trim-to Length ..... 2.550″
Maximum Overall Length (w/Bullet) 3.250″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test:
Schultz & Larsen 65DL
Barrel Length ..... 24″ Twist ..... 1-10″

Our test rifle had a considerable amount of free-bore. On custom rifles which are not free-bored, maximum loads should be reduced by a full 5% from those listed. Even with this reduction, such loads should be approached with caution.

While magnum primers were used with all of the jacketed bullet loads listed, we suggest that only standard large rifle primers be used with cast bullet loads.

.308 NORMA Cont'd. Next Page

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	59.0	2890	66.0	3413
IMR 4320	61.0	2958	68.0	3448
IMR 4350	71.0	3164	79.0*	3584
H 380	67.0	3067	74.0	3460
4831	72.0	2840	80.5*	3225
H 450	76.0	3164	84.0*	3534

Accuracy Load:
IMR 4350 Powder, 75.0 Grains, 3375 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	59.0	2865	65.0	3268
IMR 4320	60.0	2873	67.0	3300
IMR 4350	70.0	3095	78.0*	3484
H 380	66.0	3030	73.0	3345
4831	72.0	2859	80.5*	3184
H 450	75.0	3076	83.0*	3367

Accuracy Load:
IMR 4350 Powder, 70.0 Grains, 3095 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	58.0	2793	64.0	3164
IMR 4320	57.0	2688	65.0	3134
IMR 4350	68.0	2967	75.0	3345
H 380	63.0	2801	70.0	3144
4831	72.0	2881	80.5*	3184
H 450	73.0	2958	81.0*	3300

Accuracy Load:
IMR 4350 Powder, 74.0 Grains, 3280 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	56.0	2652	62.0	2985
IMR 4320	57.0	2680	63.0	2976
IMR 4350	66.0	2857	73.0	3194
H 380	61.0	2688	68.0	3030
4831	71.0	2762	79.0*	3105
H 450	71.0	2840	79.0*	3144

Accuracy Load:
IMR 4350 Powder, 66.0 Grains, 2857 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	53.0	2487	59.0	2793
IMR 4320	54.0	2487	60.0	2777
IMR 4350	64.0	2702	71.0	3067
H 380	59.0	2551	66.0	2873
4831	69.0	2652	77.0*	2994
H 450	69.0	2688	78.0*	3115

Accuracy Load:
H 450 Powder, 77.0 Grains, 3021 F.P.S.

Factory Duplication Load:
H 450 Powder, 78.0 Grains, 3115 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	52.0	2392	58.0	2710
IMR 4320	53.0	2386	59.0	2688
IMR 4350	63.0	2659	70.0	2941
H 380	58.0	2506	64.0	2732
4831	68.0	2597	75.0*	2865
H 450	68.0	2597	75.0	2873

Accuracy Load:
IMR 4350 Powder, 64.0 Grains, 2702 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	50.0	2272	56.0	2570
IMR 4320	51.0	2252	57.0	2570
IMR 4350	61.0	2525	68.0*	2808
H 380	57.0	2427	63.0	2659
4831	66.0	2500	73.0*	2732
H 450	66.0	2469	73.0	2732

Accuracy Load:
4831 Powder, 66.0 Grains, 2500 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1700	18.0	1893
2400	24.0	1845	27.0	2012
IMR 4227	24.0	1715	28.0	1949

Accuracy Load:
Unique Powder, 18.0 Grains, 1893 F.P.S.

173 Grain Cast (w/Gas Check)

BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1569	17.0	1763
2400	22.0	1715	26.0	1919
IMR 4227	22.0	1600	27.0	1890

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1600 F.P.S.

193 Grain Cast (w/Gas Check)

BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1488	16.0	1612
2400	20.0	1552	27.0	1897
IMR 4227	20.0	1412	27.0	1792

Accuracy Load:
2400 Powder, 27.0 Grains, 1897 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.300 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .308″
Maximum Case Length ..... 2.825″
Trim-to Length ..... 2.815″
Maximum Overall Length (w/Bullet) 3.5625″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test .. Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-12″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only**. The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby, Inc. for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Use only stardard large rifle primers with cast bullet data.

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	71.0	3360	79.0	3816
IMR 4320	74.0	3559	82.0	3937
IMR 4350	81.0	3440	90.0*	3906
H 380	78.0	3472	86.0	3831
H 450	85.0	3215	94.0	3745
4831	85.0	3205	94.0*	3559

Accuracy Load:
4831 Powder, 85.0 Grains, 3205 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	66.0	3003	73.0	3390
IMR 4320	68.0	3144	76.0	3521
IMR 4350	77.0	3144	86.0	3636
H 380	73.0	3154	81.0	3521
H 450	83.0	3154	92.0	3584
4831	83.0	3076	92.0*	3509

Accuracy Load:
4831 Powder, 92.0* Grains, 3509 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	64.0	2865	71.0	3230
IMR 4320	67.0	3076	74.0	3367
IMR 4350	75.0	3058	82.0	3401
H 380	70.0	3039	78.0	3322
H 450	79.0	2994	88.0	3390
4831	79.0	2849	88.0*	3333

Accuracy Load:
IMR 4831 Powder, 88.0* Grains, 3333 F.P.S.

165 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	62.0	2724	69.0	3003
IMR 4320	64.0	2857	71.0	3174
IMR 4350	72.0	2900	80.0	3285
H 380	69.0	2967	76.0	3215
H 450	76.0	2840	85.0	3236
4831	76.0	2754	85.0	3184

Accuracy Load:
4831 Powder, 85.0 Grains, 3184 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	61.0	2604	68.0	2949
IMR 4320	63.0	2770	70.0	3048
IMR 4350	71.0	2793	79.0	3194
H 380	68.0	2577	75.0	3076
H 450	74.0	2724	82.0	3048
4831	74.0	2645	82.0	3067

Accuracy Load:
IMR 4350 Powder, 71.0 Grains, 2793 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 78.5 Grains, 3164 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	60.0	2570	66.0	2793
IMR 4320	60.0	2638	67.0	2865
IMR 4350	69.0	2676	76.0	3008
H 380	67.0	2724	73.0	2936
H 450	71.0	2583	79.0	2873
4831	71.0	2500	79.0	2865

Accuracy Load:
4831 Powder, 79.0 Grains, 2865 F.P.S.

.300 WEATHERBY Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	56.0	2369	62.0	2590
IMR 4320	60.0	2531	65.0	2717
IMR 4350	66.0	2506	73.0	2808
H 380	62.0	2918	69.0	2739
H 450	69.0	2457	77.0	2747
4831	69.0	2375	77.0	2754

Accuracy Load:
4831 Powder, 77.0 Grains, 2754 F.P.S.

173 Grain Cast (w/Gas Check)
BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1572	19.0	1818
2400	23.0	1736	28.0	1976

Accuracy Load:
2400 Powder, 23.0 Grains, 1736 F.P.S.

193 Grain Cast (w/Gas Check)
BULLET #311334 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1449	18.0	1680
2400	22.0	1607	27.0	1828

Accuracy Load:
2400 Powder, 22.0 Grains, 1607 F.P.S.

213 Grain Cast (w/Gas Check)
BULLET #311290 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1265	16.0	1506
2400	20.0	1474	25.0	1718
IMR 4227	31.0	1838	35.0	2000

Accuracy Load:
IMR 4227 Powder, 31.0 Grains, 1838 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7.62 RUSSIAN
(7.62 x 54Rmm)

SPECIFICATION:

Bullet Dia. Jacketed ..... See Cartridge Story
Bullet Dia. Cast ..... See Cartridge Story
Maximum Case Length ..... 2.114″
Trim-to Length ..... 2.105″
Maximum Overall Length (w/Bullet) 3.037″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 17
Firearm used for Test:
Westinghouse/Russian
Barrel Length ..... 24″ Twist ..... 1-10″

Groove and bore dimensions of these Russian Military's vary considerably. Most rifles have a groove diameter of .310″ and for these we recommend jacketed bullets of .308″ diameter or cast bullets of .310″ diameter. Due to the limitations of the chamber size, larger bullets are not recommended even in rifles which have large diameter grooves.

In our test rifle I.M.R. 4350, powder gave very uniform velocities with all jacketed bullet weights.

7.62 RUSSIAN Cont'd. Next Page

7.62 RUSSIAN Continued
(7.62 x 54Rmm)

110 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	45.0	2801	50.0	3134
IMR 4895	47.0	2724	52.0	3067
IMR 4064	49.0	2793	54.0*	3105
IMR 4320	50.0	2816	55.0	3105
IMR 4350	50.0	2352	56.0*	2710
H 380	52.0	2680	59.0*	3048
4831	51.0	2105	57.0*	2444

Accuracy Load:
IMR 4064 Powder, 49.0 Grains, 2793 F.P.S.

130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	43.0	2638	48.0	2949
IMR 4895	45.0	2557	50.0	2881
IMR 4064	47.0	2631	52.0*	2967
IMR 4320	49.0	2702	54.0	3012
IMR 4350	50.0	2398	55.0*	2652
H 380	53.0	2777	59.0*	2967
4831	51.0	2096	57.0*	2427

Accuracy Load:
IMR 4320 Powder, 49.0 Grains, 2702 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2518	46.0	2785
IMR 4895	43.0	2469	48.0	2762
IMR 4064	44.0	2427	49.0	2793
IMR 4320	46.0	2518	51.0	2849
IMR 4350	50.0	2439	55.0*	2695
H 380	52.0	2672	58.0*	2881
4831	51.0	2155	57.0*	2457

Accuracy Load:
IMR 4350 Powder, 55.0* Grains, 2695 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2257	43.0	2506
IMR 4895	41.0	2277	45.0	2493
IMR 4064	43.0	2341	48.0	2659
IMR 4320	45.0	2409	50.0	2724
IMR 4350	50.0	2433	55.0*	2666
H 380	50.0	2506	55.0*	2652
4831	51.0	2227	57.0*	2475

Accuracy Load:
IMR 4350 Powder, 53.0 Grains, 2564 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 53.1 Grains, 2570 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2123	41.0	2358
IMR 4895	39.0	2136	43.0	2358
IMR 4064	41.0	2188	46.0	2493
IMR 4320	43.0	2298	48.0	2557
IMR 4350	48.0	2288	53.0*	2518
H 380	47.0	2293	52.0*	2469
4831	50.0	2114	56.0*	2392

Accuracy Load:
IMR 4350 Powder, 48.0 Grains, 2288 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	1960	39.0	2188
IMR 4895	37.0	1949	41.0	2217
IMR 4064	40.0	2096	44.0	2309
IMR 4320	41.0	2127	46.0	2403
IMR 4350	46.0	2141	51.0*	2369
H 380	45.0	2141	50.0*	2403
4831	50.0	2053	55.0*	2309

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2185 F.P.S.

153 Grain Cast (w/Gas Check)
BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1592	15.0	1827
2400	23.5	1980	27.0	2197

Accuracy Load:
2400 Powder, 25.0 Grains, 1984 F.P.S.

173 Grain Cast (w/Gas Check)
BULLET #311291 (#2 ALLOY)
CAN ALSO USE BULLET
#31141 (176 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1461	14.0	1680
2400	22.0	1865	24.0	1941

Accuracy Load:
2400 Powder, 24.0 Grains, 1941 F.P.S.

213 Grain Cast (w/Gas Check)
BULLET #311290 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1261	13.0	1483
2400	17.0	1413	22.0	1754
IMR 4227	27.0	1882	30.0	2028

Accuracy Load:
IMR 4227 Powder, 30.0 Grains, 2028 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7.65 ARGENTINE MAUSER

(7.65 x 53mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast .311″ to .313″
Maximum Case Length ..... 2.105″
Trim-to Length ..... 2.100″
Maximum Overall Length (w/Bullet) 2.970″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test .... Argentine Mauser
Barrel Length .... 29¼″ Twist .... 1-9.8″

A wide variation of groove diameters exist with rifles chambered for this caliber. We recommend that you slug your barrel before reloading (see "Accuracy with Cast Bullets" in reference section). Jacketed bullets are available in three diameters; .311″ (Speer and Sierra), .312″ (Hornady) .313″ (Speer). Use the jacketed bullet which most closely corresponds with your groove diameter.

For Speer or Hornady 175 grain bullets use the data listed for 180 grain bullets.

Cast bullet #311466 (155 grs.) worked well in our testing. This bullet is not recommended, however, for rifles which have groove diameters larger than .311″ as it casts rather small (.312″). Where sizing diameters exceed .311″ use #311284 (214 gr.)

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	40.0	2512	44.0	2739
IMR 4064	41.0	2331	46.0	2710
IMR 4895	41.0	2392	46.0	2732
IMR 4320	43.0	2457	48.0	2747
IMR 4350	45.0	2197	50.0*	2512
H 380	46.0	2531	51.0	2747
4831	48.0	2109	53.0*	2380

Accuracy Load:
IMR 4895 Powder, 46.0 Grains, 2732 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2288	42.0	2531
IMR 4064	40.0	2298	44.0	2551
IMR 4895	40.0	2304	44.0	2551
IMR 4320	42.0	2040	47.0	2666
IMR 4350	44.0	2150	49.0*	2463
H 380	45.0	2364	50.0*	2544
4831	47.0	2049	52.0*	2320

Accuracy Load:
IMR 4895 Powder, 41.0 Grains, 2370 F.P.S.

215 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	34.0	2000	38.0	2178
IMR 4064	36.0	1988	40.0*	2197
IMR 4895	36.0	2036	40.0	2227
IMR 4320	40.0	2159	44.0	2336
IMR 4350	41.0	1960	46.0*	2212
H 380	42.0	2092	47.0	2304
4831	46.0	1988	51.0*	2188

Accuracy Load:
IMR 4895 Powder, 40.0 Grains, 2227 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1628	15.0	1869

205 Grain Cast (w/Gas Check)

BULLET #311299 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1330	13.0	1461
2400	20.0	1715	24.0	1934

Accuracy Load:
2400 Powder, 24.0 Grains, 1934 F.P.S.

214 Grain Cast (w/Gas Check)

BULLET #311284 (#2 ALLOY)
CAN ALSO USE BULLET
#311290 (213 Grs. w/Gas Check)
Where sizing dia. does not exceed .311″

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.5	1278	12.5	1492
2400	19.0	1633	23.0	1879
IMR 4227	22.0	1715	26.0	1941

Accuracy Load:
2400 Powder, 19.0 Grains, 1633 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.303 BRITISH

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast
See Cartridge Story
Maximum Case Length ..... 2.222″
Trim-to Length ..... 2.212″
Maximum Overall Length (w/Bullet) 3.075″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 7
Firearm used for Test ..... S.M.L.E.
Barrel Length ..... 25″ Jacketed/22″ Lead
Twist ..... 1-10″

An extreme variation in groove diameters exist in rifles chambered for this cartridge. In rifles which we have checked, diameters range from .309″ to .317″. We suggest that you slug your barrel before reloading (see "Accuracy with Cast Bullets" in reference section). Jacketed bullets are available in three diameters; .311″ (Speer and Sierra), .312″ (Hornady), .313″ (Speer). Use the jacketed bullet which most closely corresponds to your groove diameter. If your groove diameter runs on the small size (under .310″) the use of jacketed bullets is not recommended at all. If your groove diameter should be large (over .314″) results will be poor.

Cast bullets should be sized as near groove diameter as possible. Bullet #311466 should not be used where a sizing diameter larger than .311″ is required.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	38.0	2288	42.0	2597
IMR 4064	40.0	2304	44.0	2577
IMR 4895	41.0	2409	45.0	2666
IMR 4320	41.0	2331	46.0	2672
Rx 21	41.0	2341	46.0*	2577
H 380	42.0	2309	47.0	2570

Accuracy Load:
IMR 4895 Powder, 41.0 Grains, 2409 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	2044	39.0	2320
IMR 4064	38.0	2127	42.0	2386
IMR 4895	39.0	2207	43.0	2469
IMR 4320	40.0	2207	44.0	2469
Rx 21	40.0	2237	43.0*	2375
H 380	41.0	2127	45.0	2369

Accuracy Load:
IMR 4320 Powder, 44.0 Grains, 2469 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 42.5 Grains, 2433 F.P.S.

215 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	32.0	1840	36.0	2057
IMR 4064	35.0	1698	39.0	1996
IMR 4895	36.0	2000	40.0	2217
IMR 4320	37.0	2008	41.0	2217
Rx 21	37.0	2044	40.0*	2164
H 380	40.0	2028	43.0	2150

Accuracy Load:
IMR 4895 Powder, 39.5 Grains, 2188 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 39.6 Grains, 2183 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1610	15.0	1872
2400	20.0	1845	24.0	2109
IMR 4227	25.0	2066	28.0	2217

Accuracy Load:
Unique Powder, 11.0 Grains, 1610 F.P.S.

205 Grain Cast (w/Gas Check)

BULLET #311299 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1510	14.0	1600
2400	19.0	1628	24.0	1893
IMR 4227	23.0	1745	27.0	1953

Accuracy Load:
IMR 4227 Powder, 23.0 Grains, 1745 F.P.S.

214 Grain Cast (w/Gas Check)

BULLET #311284 (#2 ALLOY)
CAN ALSO USE BULLET
#311290 (213 Grs. w/Gas Check)
where sizing dia. required is .311″ or less

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1275	13.0	1501
2400	18.0	1501	23.0	1811
IMR 4227	22.0	1652	29.0	1937

Accuracy Load:
2400 Powder, 18.0 Grains, 1501 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

7.7 JAPANESE

(7.7 x 58mm Arisaka)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast
See Cartridge Story
Maximum Case Length ..... 2.269″
Trim-to Length ..... 2.260″
Maximum Overall Length (w/Bullet) 3.150″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2

Firearm used for Test:
Japanese Service Rifle
Barrel Length ..... 25″ Twist ..... 1-9.75″

An extreme variation in groove diameters exists in rifles chambered for this cartridge. In rifles which we have checked, diameters range from .310″ to .317″. We suggest that you slug your barrel before reloading (see "Accuracy with Cast Bullets" in reference section). Jacketed bullets are available in three diameters; .311″ (Speer and Sierra), .312″ (Hornady), .313″ (Speer). Use the jacketed bullet which most closely corresponds to your groove diameter. With barrels larger than .314″ results will be poor.

Due to wide variations in bullet and groove diameters, utmost care should be used when working up loads.

Cast bullets should be sized as close to groove diameter as possible.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2444	46.0	2717
IMR 4895	43.0	2386	48.0	2754
IMR 4064	43.0	2267	48.0	2666
IMR 4320	45.0	2421	49.0	2717
IMR 4350	49.0	2304	54.0	2659
H 380	47.0	2375	52.0	2695

Accuracy Load:
IMR 4064 Powder, 43.0 Grains, 2267 F.P.S.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	39.0	2202	43.0	2444
IMR 4895	42.0	2304	46.0	2564
IMR 4064	42.0	2227	46.0	2512
IMR 4320	43.0	2309	47.0	2590
IMR 4350	47.0	2207	51.0*	2538
H 380	45.0	2237	50.0	2525

Accuracy Load:
IMR 4350 Powder, 47.0 Grains, 2207 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 44.8 Grains, 2500 F.P.S.

215 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	1992	39.0	2178
IMR 4895	39.0	2127	43.0	2352
IMR 4064	39.0	2053	43.0	2293
IMR 4320	41.0	2178	44.0	2347
IMR 4350	44.0	2061	49.0	2375
H 380	43.0	2123	48.0	2352

Accuracy Load:
IMR 4350 Powder, 49.0 Grains, 2375 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 40.0 Grains, 2197 F.P.S.

155 Grain Cast (w/Gas Check)

BULLET #311466 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1470	15.0	1739
2400	22.0	1821	24.0	1953

205 Grain Cast (w/Gas Check)

BULLET #311299 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1250	14.0	1524
2400	21.0	1607	24.0	1792
IMR 4227	28.0	1923	30.0	2049

214 Grain Cast (w/Gas Check)

BULLET #311284 (#2 ALLOY)
CAN ALSO USE BULLET
#311290 (213 Grs. w/Gas Check)
Where a sizing dia. no larger than .311″ is required.

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1214	13.0	1423
2400	21.0	1595	24.0	1739
IMR 4227	28.0	1865	30.0	1992

Accuracy Load:
IMR 4227 Powder, 30.0 Grains, 1992 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

32/20 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .310″
Bullet Dia. Cast ..... .311″ to .312″
Maximum Case Length ..... 1.315″
Trim-to Length ..... 1.305″
Maximum Overall Length (w/Bullet) 1.592″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 10
Firearm used for Test ..... Savage Sporter
Barrel Length .... 24½″ Twist .... 1-20″

Do not use the loads listed in rifles which were designed for Black Powder or in Handguns. For Handgun loads, see the pistol data section.

Some cartridge cases may be encountered which are actually shorter than the listed "Trim-to-length". This will cause no problems in your loading, but such cases for this cartridge should be segregated according to length because of the different adjustments which will be necessary in your bullet seating die.

Some small variations in groove diameter exists in rifles chambered for this cartridge. It is advisable to slug your barrel and size cast bullets accordingly. See "Accuracy with Cast Bullets" in reference section.

80 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1410	6.6	1739
2400	11.0	1557	13.0	1897
IMR 4227	15.0	2044	17.0*	2257

Accuracy Load:
IMR 4227 Powder, 15.3 Grains, 2100 F.P.S.

Factory Duplication Load:
IMR 4227 Powder, 15.2 Grains, 2079 F.P.S.

100 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.5	1169	6.0	1476
2400	9.0	1246	11.5	1700
IMR 4227	13.0	1720	15.0	1984

Accuracy Load:
IMR 4227 Powder, 13.0 Grains, 1720 F.P.S.

Factory Duplication Load:
2400 Powder, 9.3 Grains, 1278 F.P.S.

91 Grain Cast (w/Gas Check)

BULLET #311419 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	1428	6.0	1650
2400	10.0	1466	12.0	1868
IMR 4227	13.0	1769	15.0	2012

Accuracy Load:
IMR 4227 Powder, 15.0 Grains, 2012 F.P.S.

115 Grain Cast (w/Gas Check)

BULLET #311316 (#2 ALLOY)
CAN ALSO USE BULLET
#311359 (118 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.0	1175	5.0	1385
2400	8.0	1197	11.0	1686
IMR 4227	12.0	1623	14.0	1865

Accuracy Load:
IMR 4227 Powder, 14.0 Grains, 1865 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

32/40

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .320" & .321"
Maximum Case Length ..... 2.130"
Trim-to Length ..... 2.120"
Maximum Overall Length (w/Bullet) 2.500"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 6
Firearm used for Test ..... Winchester 94
Barrel Length ..... 20" Jacketed/26" Lead
Twist ..... 1-16"

Use only blunt or round nose bullets in rifles which have tubular magazines and crimp the bullets to prevent their movement. Due to the popularity of the 170 grain jacketed bullet, we have used and listed it for a factory duplication load rather than the 165 grain bullet which is normally loaded by the factories for this cartridge.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	13.0	1124	15.0	1379
IMR 4227	14.0	1034	16.5	1348
IMR 4198	18.8	1284	22.0	1680
IMR 3031	25.0	1512	28.0	1845
IMR 4895	27.0	1648	30.0	1892
IMR 4064	26.0	1527	29.0	1745
Rx 7	22.0	1479	25.0	1672

Accuracy Load:
IMR 4198 Powder, 20.0 Grains, 1422 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 18.8 Grains, 1284 F.P.S.

164 Grain Cast (w/Gas Check)

BULLET #321317 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.0	1189	8.2	1400
2400	11.0	1218	14.9	1600
IMR 4227	12.0	1195	15.4	1488

Accuracy Load:
Unique Powder, 8.2 Grains, 1400 F.P.S.

Factory Duplication Load:
Unique Powder, 7.5 Grains, 1335 F.P.S.

184 Grain Cast (w/Gas Check)

BULLET #321297 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.0	962	7.0	1039
2400	11.0	1182	14.0	1457
IMR 4227	12.0	1158	14.5	1365

Accuracy Load:
IMR 4227 Powder, 12.0 Grains, 1158 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

32 REMINGTON

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .320" to .321"
Bullet Dia. Cast ..... .319" to .321"
Maximum Case Length ..... 2.050"
Trim-to Length ..... 2.045"
Maximum Overall Length (w/Bullet) 2.525"
Primer Size ..... Large Rifle
Lyman Shell Holder Number ..... #15 or #3
Firearm used for Test ..... Remington 81
Barrel Length ..... 22" Twist ..... 1-14"

Jacketed bullets for this cartridge are available in .320" diameter (Rem.) and .321" diameter (Hornady). As we have encountered barrels as small as .319", we suggest that you slug your barrel before reloading (see "Accuracy with Cast Bullets" in reference section). For tight barrels, the smaller Remington bullet is recommended.

New brass cases which exceed the maximum case length listed may be encountered. We suggest that you check your case length before reloading and trim your case if necessary.

The Lyman #15 Shell Holder is proper for all cases with the exception of Remington brand. For Remington cases use the Lyman #3 Shell Holder.

Data listed for Unique powder will not function the action of semi-auto rifles.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	23.0	1840	26.0	1992
IMR 3031	27.0	1798	30.0	2020
IMR 4064	28.0	1680	32.0	1980
IMR 4895	30.0	1868	33.0	2070
IMR 4320	31.0	1845	35.0	2136
Rx 7	28.0	2100	31.0	2252

Accuracy Load:
Rx 7 Powder, 29.3 Grains, 2141 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 33.0 Grains, 2070 F.P.S.

164 Grain Cast
BULLET #321317 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1234	12.0	1720
2400	18.0	1798	21.0	2012

Accuracy Load:
Unique Powder, 9.0 Grains, 1436 F.P.S.

184 Grain Cast (w/Gas Check)
BULLET #321297 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1159	9.0	1369
2400	16.0	1552	19.0	1788

Accuracy Load:
2400 Powder, 16.0 Grains, 1552 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

32 WINCHESTER SPECIAL

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .320″ & .321″
Maximum Case Length ..... 2.040″
Trim-to Length ..... 2.035″
Maximum Overall Length (w/Bullet) 2.565″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 6
Firearm used for Test ..... Winchester 94
Barrel Length ..... 20″ Twist ..... 1-16″

New brass cases which exceed the maximum case length listed may be encountered. We recommend that you check all cases before reloading and trim their length if necessary.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	24.0	1956	27.0	2150
IMR 3031	28.0	1912	31.0	2159
IMR 4064	28.0	1685	33.0	2070
IMR 4895	28.0	1792	33.0	2136
IMR 4320	31.0	1908	35.0	2169
Rx 7	28.0	2123	31.0	2283
Ball C2	31.0	1872	34.0	2040
H 380	36.0	1945	39.0	2109

Accuracy Load:
Rx 7 Powder, 28.0 Grains, 2123 F.P.S.

Factory Duplication Load:
Rx 7 Powder, 30.6 Grains, 2262 F.P.S.

137 Grain Cast

BULLET #321427 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1508	12.0	1800
2400	14.0	1516	21.0	2070
IMR 4227	16.0	1579	25.0	2242
IMR 4198	17.0	1412	26.0	2057
IMR 3031	20.0	1384	31.0	2083

Accuracy Load:
IMR 4227 Powder, 25.0 Grains, 2242 F.P.S.

164 Grain Cast (w/Gas Check)

BULLET #321317 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1322	10.0	1512
2400	14.0	1388	18.0	1724
IMR 4227	16.0	1453	24.0	2066
IMR 4198	17.0	1319	26.0	2032
IMR 3031	20.0	1309	31.0	2087

Accuracy Load:
Unique Powder, 10.0 Grains, 1512 F.P.S.

184 Grain Cast (w/Gas Check)

BULLET #321297 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1164	9.0	1355
2400	13.0	1125	17.0	1592
IMR 4227	16.0	1415	23.0	1964
IMR 4198	17.0	1330	25.0	1918
IMR 3031	19.0	1226	29.0	1941

Accuracy Load:
IMR 4198 Powder, 25.0 Grains, 1918 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

8mm MAUSER
(7.9 x 57mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .323″
Maximum Case Length ..... 2.240″
Trim-to Length ..... 2.235″
Maximum Overall Length (w/Bullet) 3.250″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Mauser 98
Barrel Length ..... 23″ Twist ..... 1-9¼″

Before loading for this cartridge, we recommend that you slug your barrel (see "Accuracy with Cast Bullets" in reference section). Do not use .323″ diameter bullets in any rifle which has a groove diameter smaller than .321″.

For non-standard (small groove diameter) barrels we suggest the use of lead alloy bullets sized as near to the exact groove diameter as possible.

125 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	46.0	2865	51.0*	3184
IMR 4064	49.0	2840	54.0*	3125
IMR 4895	50.0	2898	53.0*	3194
IMR 4320	50.0	2824	55.0*	3105
IMR 4350	50.0	2421	56.0*	2717
H 380	51.0	2732	57.0*	2949
Rx 11	47.0	2785	52.0	3021

Accuracy Load:
IMR 4064 Powder, 54.0* Grains, 3125 F.P.S.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	44.0	2604	49.0	2881
IMR 4064	48.0	2631	53.0*	2915
IMR 4895	48.0	2688	51.0*	2824
IMR 4320	48.0	2577	53.0*	2865
IMR 4350	50.0	2347	56.0*	2652
H 380	50.0	2570	56.0*	2840
Rx 11	45.0	2570	50.0	2801

Accuracy Load:
IMR 4064 Powder, 48.0 Grains, 2631 F.P.S.

170 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.6	2331	47.0	2688
IMR 4064	46.0	2427	51.0*	2724
IMR 4895	46.0	2481	49.0*	2672
IMR 4320	46.0	2421	51.0*	2710
IMR 4350	49.0	2237	54.0*	2518
H 380	49.0	2433	54.0*	2631
Rx 11	43.0	2232	48.0	2617

Accuracy Load:
IMR 3031 Powder, 42.0 Grains, 2386 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 41.6 Grains, 2331 F.P.S.

225 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	41.0	2169	45.0	2347
IMR 4064	44.0	2183	49.0*	2380
IMR 4895	41.0	2087	46.0*	2341
IMR 4320	44.0	2150	49.0*	2398
IMR 4350	49.0	2141	54.0*	2403
H 380	46.0	2150	51.0*	2375
Rx 11	41.0	2079	46.0*	2336

Accuracy Load:
IMR 3031 Powder, 41.0 Grains, 2169 F.P.S.

118 Grain Cast (w/Gas Check)
BULLET #32359 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1980	17.0	2192
2400	23.0	1992	27.0	2415
IMR 4227	23.0	2010	30.0	2469
IMR 4198	27.0	2036	36.0	2531

Accuracy Load:
Unique Powder, 14.0 Grains, 1980 F.P.S.

168 Grain Cast
BULLET #323470 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1585	15.0	1785
2400	19.0	1732	24.0	2036
IMR 4227	20.0	1658	26.0	2040
IMR 4198	25.0	1848	30.0	2114
IMR 3031	33.0	2012	39.0	2304

Accuracy Load:
2400 Powder, 24.0 Grains, 2036 F.P.S.

246 Grain Cast (w/Gas Check)
BULLET #323378 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1160	14.0	1455
2400	16.0	1342	20.0	1557
IMR 4227	17.0	1337	21.0	1527

Accuracy Load:
2400 Powder, 16.0 Grains, 1342 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.338 WINCHESTER MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .338″
Maximum Case Length ..... 2.500″
Trim-to Length ..... 2.490″
Maximum Overall Length (w/Bullet) 3.340″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Winchester 70
Barrel Length ..... 24″ Twist ..... 1-10″

Fine accuracy and uniform velocities were turned in with all of the powders and bullets tested. I.M.R. 4350 and 4831 gave exceptional results. Remington magnum primers were used in collecting jacketed data. Cast bullet loadings should be used with standard large rifle primers only.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	54.0	2620	60.5	2865
IMR 4895	58.0	2659	64.0	2898
IMR 4064	59.0	2665	65.0	2915
IMR 4320	59.0	2638	66.0	2915
IMR 4350	69.0	2777	75.0*	3058
H 380	63.0	2645	70.0	2881
H 450	72.0	2645	80.0*	2898
4831	72.0	2652	80.0*	2923

Accuracy Load:
4831 Powder, 80.0* Grains, 2923 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 72.5 Grains, 2958 F.P.S.

225 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	52.0	2450	58.0	2638
IMR 4895	56.0	2469	62.5	2724
IMR 4064	57.0	2475	63.0	2717
IMR 4320	57.0	2469	63.0	2695
IMR 4350	67.0	2597	74.0*	2915
H 380	60.0	2457	67.0	2645
H 450	70 0	2512	78.0*	2762
4831	70 0	2493	78.0*	2797

Accuracy Load:
IMR 4350 Powder, 67.0 Grains, 2597 F.P.S.

250 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	50.0	2272	56.5	2469
IMR 4895	55.0	2352	61.5	2597
IMR 4064	56.0	2347	62.0	2577
IMR 4320	56.0	2352	62.0	2557
IMR 4350	65.0	2450	72.0*	2762
H 380	59.0	2352	66.0	2544
H 450	69.0	2375	76.0	2638
4831	69.0	2403	76.0*	2666

Accuracy Load:
IMR 4350 Powder, 69.2 Grains, 2652 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 69.0 Grains, 2631 F.P.S.

275 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	48.0	2145	53.0	2293
IMR 4895	54.0	2252	60.0	2469
IMR 4064	54.0	2227	60.0	2450
IMR 4320	54.0	2212	60.0	2415
IMR 4350	62.0	2331	69.0	2597
H 380	58.0	2237	64.0	2398
H 450	66.0	2237	73.0	2531
4831	66.0	2314	73.0*	2570

Accuracy Load:
IMR 4350 Powder, 62.0 Grains, 2331 F.P.S.

203 Grain Cast (w/Gas Check)

BULLET #338320 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	31.0	1908	36.0	2118
IMR 3031	39.0	2044	43.0	2150
IMR 4895	42.0	2053	47.0	2247

Accuracy Load:
IMR 4198 Powder, 31.0 Grains, 1908 F.P.S.

249 Grain Cast

BULLET #33889 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	30.0	1721	35.0	1904
IMR 3031	38.0	1801	42.0	1945
IMR 4895	41.0	1835	46.0	2044

Accuracy Load:
IMR 4895 Powder, 46.0 Grains, 2044 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.340 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .338″
Maximum Case Length ..... 2.825″
Trim-to Length ..... 2.815″
Maximum Overall Length (w/Bullet) 3.5625″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test .... Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-10″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only.** The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby Inc., for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Use only standard large rifle primers with lead bullets.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	65.0	2564	72.0	2890
IMR 4320	68.0	2710	76.0	3048
IMR 4350	76.0	2724	84.0	3144
H 380	72.0	2808	80.0	3039
4831	81.0	2604	90.0*	3021
H 450	81.0	2720	90.0	3036

Accuracy Load:
IMR 4350 Powder, 82.5 Grains, 3046 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 83.5 Grains, 3115 F.P.S.

225 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	62.0	2409	69.0	2724
IMR 4320	65.0	2564	72.0	2832
IMR 4350	72.0	2538	80.0	2923
H 380	68.0	2575	76.0	2812
4831	78.0	2512	87.0*	2915
H 450	78.0	2597	87.0	2906

Accuracy Load:
4831 Powder, 78.0 Grains, 2512 F.P.S.

250 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	59.0	2252	66.0	2551
IMR 4320	63.0	2427	70.0	2680
IMR 4350	70.0	2418	77.0	2739
H 380	66.0	2484	73.0	2672
4831	77.0	2439	85.0*	2793
H 450	77.0	2525	85.0	2777

Accuracy Load:
IMR 4350 Powder, 76.5 Grains, 2688 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 76.7 Grains, 2730 F.P.S.

275 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4064	56.0	2092	61.0	2314
IMR 4320	60 0	2283	67.0	2500
IMR 4350	66.0	2262	73.0	2544
H 380	63.0	2314	70.0	2481
4831	73.0	2293	81.0*	2617
H 450	73.0	2314	81.0	2631

Accuracy Load:
IMR 4350 Powder, 66.0 Grains, 2262 F.P.S.

203 Grain Cast (w/Gas Check)

BULLET #338320 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	32.0	1782	38.0	2044
IMR 3031	40.0	1949	44.0	2100
IMR 4895	42.0	1930	48.0	2109

Accuracy Load:
IMR 3031 Powder, 42.0 Grains, 2032 F.P.S.

249 Grain Cast (w/Gas Check)

BULLET #33889 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	25.0	1442	37.0	1923
IMR 3031	39.0	1768	43.0	1962
IMR 4895	41.0	1811	47.0	2024

Accuracy Load:
IMR 4198 Powder, 37.0 Grains, 1923 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.348 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .348″
Maximum Case Length ..... 2.255″
Trim-to Length ..... 2.245″
Maximum Overall Length (w/Bullet) 2.795″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 18
Firearm used for Test ..... Winchester 71
Barrel Length ..... 24″ Twist ..... 1-12″

Only blunt, or round nose bullets, should be used in these rifles which have tubular magazines. Bullets should also be crimped in place to prevent their movement during recoil.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	44.0	2262	49.0	2430
IMR 4895	49.0	2341	54.0	2506
IMR 4064	48.0	2222	53.6	2450
IMR 4320	50.0	2252	55.0	2481
IMR 4350	57.0	2262	63.0	2564
H 380	50.0	2188	57.0	2347
4831	61.0	2169	67.0*	2409

Accuracy Load:
IMR 4895 Powder, 53.0 Grains, 2450 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 53.3 Grains, 2469 F.P.S.

220 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	42.0	2118	47.0	2325
IMR 4895	47.0	2227	52.0	2421
IMR 4064	46.0	2136	51.0	2347
IMR 4320	48.0	2183	53.0	2403
IMR 4350	54.0	2202	60.0	2463
H 380	50.0	2222	56.0	2336
4831	59.0	2159	65.0*	2405

Accuracy Load:
IMR 4064 Powder, 46.0 Grains, 2136 F.P.S.

187 Grain Cast (w/Gas Check)

BULLET #350447 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	20.0	1610	23.0	1779
IMR 4227	20.0	1510	30.5	2123
IMR 4198	25.0	1672	35.0	2150
IMR 3031	35.0	1818	47.0	2338

Accuracy Load:
IMR 3031 Powder, 41.0 Grains, 2060 F.P.S.

255 Grain Cast (w/Gas Check)

BULLET #350482 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	19.0	1412	22.0	1560
IMR 4227	21.0	1428	30.0	1838
IMR 4198	27.0	1661	38.5	2096
IMR 3031	35.0	1798	46.0	2217

Accuracy Load:
IMR 4198 Powder, 27.0 Grains, 1661 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.351 WINCHESTER
SELF-LOADING

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .351″
Bullet Dia. Cast ..... .352″
Maximum Case Length ..... 1.380″
Trim-to Length ..... 1.376″
Maximum Overall Length (w/Bullet) 1.900″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 15
Firearm used for Test ..... Winchester 07
Barrel Length ..... 20″ Twist ..... 1-16″

To insure positive functioning of the action, loads must be worked up to near maximum.

348 caliber gas checks are used with cast bullets for this cartridge.

At best our test accuracy with this cartridge could only be considered as fair. Best overall results were obtained with cast bullets and I.M.R. 4227 powder.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1501	11.0	1587
2400	17.0	1597	19.0	1793
IMR 4227	17.0	1400	19.5*	1751

171 Grain Cast (w/Gas Check)
BULLET #350319 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1692	12.5	1751
2400	17.0	1861	19.0*	2020
IMR 4227	17.0	1658	19.5*	1904

Accuracy Load:
IMR 4227 Powder, 19.5* Grains, 1904 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

35 REMINGTON

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .358″
Bullet Dia. Cast ..... .357″ to .359″
Maximum Case Length ..... 1.920″
Trim-to Length ..... 1.910″
Maximum Overall Length (w/Bullet) 2.525″
Primer Size ..... Large Rifle
Lyman Shell Holder Number:
See Cartridge Story
Firearm used for Test ..... Marlin 336
Barrel Length ..... 20″ Twist ..... 1-16″

While a minor amount of groove variation is encountered in rifles of this caliber, .358″ diameter bullets are workable in all instances. Use only blunt, or round nose bullets, in those rifles which have tubular magazines. Bullets are best crimped in place to prevent their moving with recoil.

With cast bullets, the bullet should be sized to the exact groove diameter. If the rifle has multi or shallow groove rifling, then cast bullet velocities must be held to 1600 F.P.S. or less, if accuracy is to be obtained. See "Accuracy with Cast Bullets" in reference section for more information.

The #8 Lyman Shell Holder works on all brass with the exception of Remington and Peters brand which requires a #2.

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150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	30.0	2000	33.5	2283
IMR 3031	36.0	2053	40.0*	2272
IMR 4064	39.0	2053	43.0*	2304
IMR 4320	40.0	2100	44.0*	2314
Rx 7	32.0	2262	35.0	2457
Ball C2	40.0	2036	45.0	2247
H 380	42.0	1956	47.0*	2127

Accuracy Load:
Rx 7 Powder, 33.0 Grains, 2325 F.P.S.

Factory Duplication Load:
Rx 7 Powder, 33.5 Grains, 2369 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	25.0	1669	28.0	1838
IMR 3031	34.0	1897	37.0*	2079
IMR 4064	35.0	1805	39.0*	2044
IMR 4320	35.0	1809	39.5	2061
Rx 7	30.0	2012	33.0	2188
Ball C2	37.0	1901	41.0	2114
H 380	40.0	1798	45.0*	1992

Accuracy Load:
IMR 4320 Powder, 38.0 Grains, 1980 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 36.1 Grains, 1992 F.P.S.

150 Grain Cast
BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1562	13.0	1848
2400	14.0	1402	21.0	1850
IMR 4227	16.0	1396	26.0	2066
IMR 4198	22.0	1582	32.0	2183
IMR 3031	30.0	1738	39.0	2217

Accuracy Load:
IMR 4227 Powder, 16.0 Grains, 1396 F.P.S.

206 Grain Cast
BULLET #358315 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1312	12.0	1545
2400	14.0	1125	20.0	1712
IMR 4227	15.0	1218	24.0	1800
IMR 4198	20.0	1295	27.0	1800
IMR 3031	28.0	1595	36.0	2036

Accuracy Load:
IMR 3031 Powder, 35.1 Grains, 1992 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 35.1 Grains, 1992 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.358 WINCHESTER
(8.8mm)

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .358″
Bullet Dia. Cast ..... .358″ to .359″
Maximum Case Length ..... 2.015″
Trim-to Length ..... 2.005″
Maximum Overall Length (w/Bullet) 2.780″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Savage 99F
Barrel Length ..... 22″ Twist ..... 1-12″

In testing this cartridge, we had rather poor results with the 150 grain bullets. Dupont I.M.R. Series powders gave very good accuracy with all of the other bullet weights.

Cast bullet accuracy with this cartridge was excellent.

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.358 WINCHESTER Continued
(8.8mm)

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	45.0	2506	50.5*	2808
IMR 4064	46.0	2272	51.0*	2570
IMR 4895	48.0	2506	53.5*	2747
IMR 4320	50.0	2544	55.0*	2717
Rx 7	40.0	2624	44.0	2801
Rx 11	45.0	2386	50.0*	2666
Ball C2	52.0	2617	57.0*	2785
H 335	52.0	2717	57.0*	2801
H 380	50.0	2352	54.5*	2500

Accuracy Load:
IMR 3031 Powder, 45.0 Grains, 2506 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	43.0	2325	48.0*	2577
IMR 4064	46.0	2277	51.0*	2512
IMR 4895	46.0	2347	51.5*	2583
IMR 4320	47.0	2325	52.5*	2564
Rx 7	37.0	2272	42.0	2500
Rx 11	44.0	2252	48.0	2450
Ball C2	47.0	2304	52.0	2469
H 335	47.0	2352	52.0	2531
H 380	49.0	2212	54.0*	2375

Accuracy Load:
IMR 3031 Powder, 47.8 Grains, 2544 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 47.8 Grains, 2544 F.P.S.

250 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	37.0	2008	41.5*	2252
IMR 4064	40.0	2008	44.5*	2217
IMR 4895	40.0	2053	44.5*	2252
IMR 4320	41.0	2040	45.5*	2227
Rx 7	31.0	1890	35.5	2118
Rx 11	39.0	2040	43.0*	2222
Ball C2	41.0	2000	45.0	2197
H 335	41.0	2032	45.0	2252
H 380	42.0	1886	47.0*	2024

Accuracy Load:
IMR 4064 Powder, 40.0 Grains, 2008 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 39.8 Grains, 2150 F.P.S.

275 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	35.0	1792	39.0	2040
IMR 4064	38.0	1838	42.0	2024
IMR 4895	38.0	1897	42.0	2079
IMR 4320	39.0	1858	43.0	2074
Rx 7	31.0	1831	34.0	1904
Rx 11	37.0	1897	41.0	2057
Ball C2	39.0	1792	43.0	1988
H 335	39.0	1818	43.0	2016
H 380	40.0	1738	44.0	1878

Accuracy Load:
IMR 4064 Powder, 38.0 Grains, 1838 F.P.S.

206 Grain Cast (w/Gas Check)
BULLET #358315 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1562	15.0	1692
2400	21.0	1587	27.0	2016
IMR 4227	22.0	1560	29.0	1908
IMR 4198	26.0	1580	34.0	2070
IMR 3031	30.0	1580	40.0	2155

Accuracy Load:
IMR 3031 Powder, 39.0 Grains, 2109 F.P.S.

247 Grain Cast (w/Gas Check)
BULLET #358318 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1311	14.0	1517
2400	20.0	1595	26.0	1872
IMR 4227	22.0	1541	28.0	1860
IMR 4198	25.0	1567	32.0	1935
IMR 3031	30.0	1572	40.0	2150

Accuracy Load:
2400 Powder, 26.0 Grains, 1872 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 40.0 Grains, 2150 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.350 REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .358" to .359"
Bullet Dia. Cast ..... .357" to .359"
Maximum Case Length ..... 2.170"
Trim-to Length ..... 2.160"
Maximum Overall Length (w/Bullet) 2.800"
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Remington 600
Barrel Length ..... 18½" Twist ..... 1-16"

Either large rifle magnum primers or standard large rifle primers may be used with the data listed for jacketed bullets. For cast bullet loads, use only the standard large rifle primer.

Due to length limitations of the rifle magazine, bullets over 250 grains proved impractical in our testing. Even bullets of 250 grains must be set rather deeply into the case if they are to function through the magazine.

Suitable reloading powders were few due to the relatively small case capacity.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	52.0	2347	57.0	2732
IMR 4064	55.0	2331	61.0*	2710
IMR 4895	56.0	2493	62.0*	2849
IMR 4320	55.0	2314	61.0	2688

Accuracy Load:
IMR 3031 Powder, 57.0 Grains, 2732 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	49.0	2262	54.0	2597
IMR 4064	53.0	2207	59.0*	2590
IMR 4895	54.0	2429	60.0*	2732
IMR 4320	53.0	2159	59.0	2544

Accuracy Load:
IMR 3031 Powder, 54.0 Grains, 2597 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 59.0* Grains, 2680 F.P.S.

250 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	47.0	2155	52.0*	2403
IMR 4064	52.0	2169	57.0*	2415
IMR 4895	52.0	2293	58.0*	2538
IMR 4320	52.0	2192	57.0*	2392

Accuracy Load:
IMR 4320 Powder, 54.0 Grains, 2293 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 55.6 Grains, 2433 F.P.S.

206 Grain Cast (w/Gas Check)

BULLET #358315 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1522	18.0	1760
IMR 4227	29.0	1776	33.0	2004
IMR 4198	39.0	2032	42.0	2164
IMR 3031	41.0	1805	50.0	2298

Accuracy Load:
Unique Powder, 18.0 Grains, 1760 F.P.S.

247 Grain Cast (w/Gas Check)

BULLET #358318 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1348	17.0	1587
IMR 4198	37.0	1876	40.0	2036
IMR 3031	40.0	1789	48.0	2169

Accuracy Load:
Unique Powder, 17.0 Grains, 1587 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.358 NORMA MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .358″
Maximum Case Length ..... 2.515″
Trim-to Length ..... 2.505″
Maximum Overall Length (w/Bullet) 3.270″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Shultz & Larsen
Barrel Length ..... 24″ Twist ..... 1-12″

Our test rifle had a considerable amount of free-bore. On custom rifles which are not free-bored, maximum loads should be reduced by a full 5% from those listed. Even with this reduction, such loads should be approached with caution.

While magnum primers were used with all of the jacketed bullet loads listed, we suggest that only standard large rifle primers be used with cast bullet loads.

150 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	65.0	3021	72.0*	3378
IMR 4064	70.0	2994	77.0*	3322
IMR 4320	73.0	3174	81.5*	3546
IMR 4350	72.0	2577	79.5*	2941
H 380	74.0	2949	82.0*	3215

Accuracy Load:
IMR 4320 Powder, 73.0 Grains, 3174 F.P.S.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	59.0	2617	65.0	2941
IMR 4064	64.0	2688	71.0*	3030
IMR 4895	65.0	2793	72.0	3115
IMR 4320	66.0	2777	73.0	3095
IMR 4350	72.0	2710	79.5*	2941
H 380	70.0	2710	77.0*	2932

Accuracy Load:
IMR 4350 Powder, 79.0* Grains, 2920 F.P.S.

250 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	55.0	2358	61.0	2652
IMR 4064	60.0	2433	67.0*	2739
IMR 4895	61.0	2518	67.6*	2824
IMR 4320	62.0	2525	68.0*	2793
IMR 4350	72.0	2617	79.5*	2857
H 380	67.0	2525	74.0*	2710

Accuracy Load:
IMR 4320 Powder, 62.0 Grains, 2525 F.P.S.

Factory Duplication Load:
IMR 4895 Powder, 67.3 Grains, 2808 F.P.S.

275 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	52.0	2083	58.0	2392
IMR 4064	58.0	2267	64.0	2528
IMR 4895	59.0	2336	65.0	2610
IMR 4320	59.0	2288	65.0	2557
IMR 4350	68.0	2409	76.0	2688
H 380	63.0	2267	70.0	2531

Accuracy Load:
IMR 4350 Powder, 68.0 Grains, 2409 F.P.S.

206 Grain Cast (w/Gas Check)

BULLET #358315 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	16.0	1604	21.0	1865

247 Grain Cast (w/Gas Check)

BULLET #358318 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	15.0	1436	19.0	1658

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.375 H & H MAGNUM

(9.5 x 72mm)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .375″
Maximum Case Length ..... 2.850″
Trim-to Length ..... 2.840″
Maximum Overall Length (w/Bullet) 3.600″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 13
Firearm used for Test ..... Winchester 70
Barrel Length ..... 24″ Twist ..... 1-12″

Large rifle magnum primers were used in developing the jacketed bullet data listed. For cast bullet loads, use only standard large rifle primers. Due to heavy recoil we recommend that all hunting loads be crimped to prevent the bullet from moving. The 235 grain bullet due to its lack of a cannelure cannot be crimped into the case.

Excellent accuracy was obtained with all I.M.R. series powders.

235 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	64.0	2597	71.0	2849
IMR 4895	66.0	2577	73.0	2840
IMR 4064	67.0	2551	74.0	2808
IMR 4320	68.0	2583	76.0	2865
IMR 4350	79.0	2672	88.0*	2898
H 380	72.0	2512	80.0	2754
4831	80.0	2403	88.0*	2604
H 450	82.0	2481	91.0*	2747

Accuracy Load:
IMR 4895 Powder, 66.0 Grains, 2577 F.P.S.

270 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	59.0	2369	66.5	2631
IMR 4895	63.0	2398	70.0	2680
IMR 4064	64.0	2389	71.0	2666
IMR 4320	65.0	2427	72.0	2680
IMR 4350	76.0	2570	86.0*	2857
H 380	70.0	2415	78.0	2672
4831	80.0	2409	88.0*	2631
H 450	80.0	2444	89.0*	2659

Accuracy Load:
IMR 4350 Powder, 80.0 Grains, 2670 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 80.2 Grains, 2680 F.P.S.

285 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	58.0	2217	64.5	2465
IMR 4895	61.0	2227	68.0	2512
IMR 4064	62.0	2202	69.5	2500
IMR 4320	63.0	2237	70.5	2525
IMR 4350	75.0	2439	84.0*	2724
H 380	69.0	2262	76.0	2512
4831	79.0	2288	87.0*	2525
H 450	79.0	2283	87.0*	2512

Accuracy Load:
IMR 4320 Powder, 70.5 Grains, 2525 F.P.S.

300 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	57.0	2150	63.0	2386
IMR 4895	60.0	2188	67.0	2457
IMR 4064	61.0	2141	68.5	2439
IMR 4320	62.0	2212	69.5	2493
IMR 4350	74.0	2369	82.0*	2617
H 380	67.0	2222	74.0	2444
4831	77.0	2183	85.0*	2444
H 450	77.0	2267	85.0*	2469

Accuracy Load:
IMR 4350 Powder, 81.0* Grains, 2590 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 81.0* Grains, 2590 F.P.S.

249 Grain Cast

BULLET #375248 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1295	18.0	1550
SR 4756	18.0	1412	24.0	1686
IMR 3031	39.0	1703	45.0	1926

Accuracy Load:
SR 4756 Powder, 24.0 Grains, 1686 F.P.S.

269 Grain Cast (w/Gas Check)

BULLET #375296 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1206	17.0	1449
SR 4756	17.0	1334	23.0	1600
IMR 3031	38.0	1694	44.0	1869

Accuracy Load:
SR 4756 Powder, 23.0 Grains, 1600 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.378 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .375″
Maximum Case Length ..... 2.913″
Trim-to Length ..... 2.903″
Maximum Overall Length (w/Bullet) 3.690″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 17
Firearm used for Test .. Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-12″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only**. The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby, Inc., for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Use only standard large rifle primers with cast bullet data.

Due to heavy recoil we recommend that all bullets be crimped in place.

270 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4320	86.0	2739	96.0	2941
IMR 4350	98.0	2695	108.0	3076
H 450	105.0	2717	115.0	3021
4831	105.0	2717	118.0*	3086

Accuracy Load:
IMR 4320 Powder, 91.0 Grains, 2816 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 107.5 Grains, 3058 F.P.S.

300 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4320	85.0	2481	91.0	2695
IMR 4350	93.0	2518	103.0	2832
H 450	105.0	2652	109.0	2785
4831	105.0	2672	112.0*	2923

Accuracy Load:
IMR 4350 Powder, 102.6 Grains, 2824 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 102.6 Grains, 2824 F.P.S.

249 Grain Cast

BULLET #375248 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	25.0	1760	29.0	1904

267 Grain Cast (w/Gas Check)

BULLET #375449 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	24.0	1685	28.0	1831

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

38/55 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .376″
Bullet Dia. Cast ..... .377″ to .380″
Maximum Case Length ..... 2.1285″
Trim-to Length ..... 2.118″
Maximum Overall Length (w/Bullet) 2.550″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 6
Firearm used for Test ..... Winchester 94
Barrel Length ..... 26″ Twist ..... 1-18″

Most of the rifles of this caliber which we have encountered show signs of excessive headspace. It is recommended that the rifle be checked by a competent gunsmith before reloading is attempted.

Slight variations in groove diameter do exist in these rifles. Where the groove diameter measures larger than .377″, the exclusive use of cast bullets is recommended for best accuracy. See "Accuracy with Cast Bullets" in reference section.

255 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4227	20.0	1275	22.0	1374
IMR 4198	21.0	1228	23.0	1322
IMR 3031	31.0	1271	35.0	1805
2400	17.0	1221	19.0	1360
Rx 7	27.0	1219	30.0	1543

Factory Duplication Load:
2400 Powder, 17.0 Grains, 1221 F.P.S.

249 Grain Cast
BULLET #375248 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	7.0	1046	9.0	1228
2400	16.0	1292	18.0	1420
IMR 4227	19.0	1335	21.0	1543

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

38/40 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .400″
Bullet Dia. Cast ..... .400″ to .401″
Maximum Case Length ..... 1.305″
Trim-to Length ..... 1.300″
Maximum Overall Length (w/Bullet) 1.592″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 14B
Firearm used for Test ..... Winchester 92
Barrel Length ..... 20″ Twist ..... 1-36″

These loads should not be used in handguns, or in rifles which were designed for black powder. For handgun loads, see pistol section of this Handbook.

Individual tolerances vary greatly in rifles chambered for this cartridge. Therefore extreme care should be used in working up maximum loads.

The cast bullet factory duplication load is listed with a bullet which is a few grains lighter than the factory jacketed load. This is due to the popularity of bullet #40143 in this caliber.

38/40 WINCHESTER Cont'd. Next Page

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	1190	11.0	1506
2400	18.0	1420	24.6	1980
IMR 4227	20.0	1428	26.0	1904

Factory Duplication Load:
Unique Powder, 8.0 Grains, 1190 F.P.S.

172 Grain Cast

BULLET #40143 (#2 ALLOY)
CAN ALSO USE
BULLET #40188 (170 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	6.8	1190	10.2	1582
2400	17.0	1249	23.6	1980
IMR 4227	19.0	1269	26.0	1996

Factory Duplication Load:
Unique Powder, 6.8 Grains, 1190 F.P.S.

.401 WINCHESTER
SELF-LOADING

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .406" to .407"
Maximum Case Length ..... 1.500"
Trim-to Length ..... 1.495"
Maximum Overall Length (w/Bullet) 2.005"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 2
Firearm used for Test ..... Winchester 10
Barrel Length ..... 20" Twist ..... 1-14"

Cases for this cartridge are often quite old and it is recommended that you keep your loads on the light side to avoid trouble with poor brass. Many cases are found which exceed the maximum length listed. Check your case length carefully and trim the cases if necessary.

Our best test results were obtained with the 240 grain cast bullet and I.M.R. 4227 powder.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1597	15.2	1811
2400	22.0	1718	24.7	1915

212 Grain Cast

BULLET #41028 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1618	14.9	1845
2400	21.0	1773	23.5	1960
IMR 4227	26.0	1915	29.0*	2074

240 Grain Cast

BULLET #410426 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1470	13.7	1672
2400	20.0	1669	22.0	1818
IMR 4227	24.0	1506	27.5*	1968

Accuracy Load:
IMR 4227 Powder, 27.5* Grains, 1968 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

44/40 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .425″ to .429″
Maximum Case Length ..... 1.305″
Trim-to Length ..... 1.300″
Maximum Overall Length (w/Bullet) 1.592″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 14B
Firearm used for Test ..... Winchester 92
Barrel Length ..... 24″ Twist ..... 1-20″

These loads should not be used in handguns or in rifles which were designed for black powder. For handgun loads see pistol section in this Handbook.

Individual tolerances vary greatly in rifles chambered for this cartridge. Therefore, extreme care should be used in working up maximum loads.

Due to variations in groove diameters, it is recommended that you slug your barrel before reloading. Jacketed bullets that have a diameter of within .001″ (+ or —) of the actual groove diameter will work well.

Dupont I.M.R. 4227 powder gave us our most consistent test results.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.3	1181	11.3	1519
2400	24.0	1795	27.5	2079
IMR 4227	26.0	1789	29.0*	2012

Factory Duplication Load:
Unique Powder, 8.3 Grains, 1181 F.P.S.

205 Grain Cast
BULLET #42798 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.3	1230	11.3	1557
2400	22.0	1689	26.8	2053
IMR 4227	25.0	1742	28.0	1964

Accuracy Load:
2400 Powder, 22.0 Grains, 1689 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.44 REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .429″ to .431″
Maximum Case Length ..... 1.285″
Trim-to Length ..... 1.280″
Max. Overall Length (w/Jack. Bullet) 1.610″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 7
Firearm used for Test ..... Marlin 336
Barrel Length ..... 20″ Twist ..... 1-38″

For best results in the Ruger Carbine use only jacketed bullets. Cast and half jacket bullets tend to foul the gas piston and create accuracy problems. Be certain that your primers are seated correctly. A high primer can fire the cartridge before the bolt is in locked position on the Ruger Carbine.

In rifles with multi or shallow groove rifling cast bullet velocity should be held to 1600 F.P.S., or less, for best accuracy.

The overall cartridge length listed in the specifications is for jacketed bullets only. In order to correctly seat cast bullets this length must be exceeded and the cast bullet data takes this into consideration.

Use the following lengths for cast bullets:

Overall length with bullet #429215 — 1.645″
Overall length with bullet #429360 — 1.672″
Overall length with bullet #429244 — 1.690″

.44 REMINGTON MAGNUM Cont'd. Next Page

225 Grain Half-Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
SR 4756	14.0	1519	16.5*	1680
IMR 4227	23.0	1225	26.0*	1760
H 110	22.0	1666	25.0*	1872
Herco	12.0	1396	14.5*	1604
2400	21.0	1689	23.0*	1833
AL-8	15.0	1434	19.0*	1709

240 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
SR 4756	13.0	1512	15.6	1602
IMR 4227	22.0	1536	25.0*	1742
H 110	22.0	1630	24.0*	1779
Herco	11.0	1344	13.5	1530
2400	20.0	1547	22.0*	1726
AL-8	16.0	1495	18.0*	1639

Accuracy Load:
IMR 4227 Powder, 25.0* Grains, 1742 F.P.S.

Factory Duplication Load:
H 110 Powder, 23.9* Grains, 1766 F.P.S.

215 Grain Cast (w/Gas Check)
BULLET #429215 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1517	14.0	1715
Herco	12.0	1447	15.0	1652
2400	21.0	1620	24.0*	1855
SR 4756	14.0	1557	17.0	1748
IMR 4227	22.0	1585	27.0*	1893
AL-8	15.0	1413	20.0*	1724

Accuracy Load:
IMR 4227 Powder, 22.0 Grains, 1585 F.P.S.

232 Grain Cast
BULLET #429360 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1432	13.0	1666
Herco	11.0	1412	14.0	1609
2400	20.0	1607	23.0*	1845
SR 4756	13.0	1506	16.0	1669
IMR 4227	22.0	1575	26.0*	1848
AL-8	15.0	1403	19.0*	1709

Accuracy Load:
Unique Powder, 13.0 Grains, 1666 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.444 MARLIN

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .429″ to .431″
Maximum Case Length ..... 2.225″
Trim-to Length ..... 2.220″
Max. Overall Length (w/Jack. Bullet) 2.570″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 14B
Firearm used for Test ..... Marlin 444
Barrel Length ..... 24″ Twist ..... 1-38″

Many of the loads listed for this cartridge are heavily compressed. When using these loads it is essential that your bullet seating die be in absolute perfect adjustment. If the case neck does not align exactly with the crimping groove in the bullet, your cases will bulge, or crush, in loading.

The overall cartridge length listed in the specifications is for jacketed bullets only. In order to correctly seat cast bullets, they must exceed this length somewhat. The cast bullet data takes this into consideration and the following overall lengths are correct for the cast bullets listed.

Overall length with bullet #429215 — 2.595″
Overall length with bullet #429360 — 2.572″
Overall length with bullet #429244 — 2.620″

Our best test accuracy was obtained with bullet #429215.

.444 MARLIN Cont'd. Next Page

225 Grain Half-Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	46.0	2288	49.0*	2409
IMR 3031	50.0	2032	55.0*	2237
IMR 4895	52.0	2036	57.0*	2217

240 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4198	42.0	2096	47.0*	2341
IMR 3031	50.0	2053	55.0*	2242
IMR 4895	52.0	2032	57.0*	2232

Accuracy Load:
IMR 4198 Powder, 47.0* Grains, 2341 F.P.S.

215 Grain Cast (w/Gas Check)
BULLET #429215 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1418	18.0	1834
SR 4756	19.0	1641	22.0	1824

Accuracy Load:
Unique Powder, 17.0 Grains, 1795 F.P.S.

232 Grain Cast
BULLET #429360 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1408	17.0	1745
SR 4756	18.0	1521	21.0	1748

Accuracy Load:
Unique Powder, 17.0 Grains, 1745 F.P.S.

250 Grain Cast (w/Gas Check)
BULLET #429244 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	1391	17.0	1724
SR 4756	18.0	1521	21.0	1718

45/70 GOVERNMENT
1873 SPRINGFIELD
(Trap Door Models)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .457″ & .458″
Maximum Case Length ..... 2.105″
Trim-to Length ..... 2.100″
Maximum Overall Length (w/Bullet) 2.550″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 17
Firearm used for Test ..... Springfield
Barrel Length ..... 32½″ Twist ..... 1-22″

These loadings are intended for single shot 45/70 rifles which have trap door actions. Do not use the loads listed for the 1886 Winchester in these rifles.

Due to the soft steel used in many of these old guns, jacketed bullet loads tend to erode the barrel. Cast bullets will be kinder to your barrel and will probably prove to be more accurate than jacketed bullets.

300 Grain Short Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	24.0	1426	30.0	1715
Rx 7	33.0	1408	38.0	1639
IMR 4227	27.0	1459	32.0	1647
IMR 4198	31.0	1447	36.0	1647
IMR 3031	38.0	1436	43.0	1582

Accuracy Load:
IMR 3031 Powder, 38.0 Grains, 1436 F.P.S.

405 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	11.0	890	15.0	1223
2400	22.0	1124	27.0	1394
Rx 7	29.0	1211	34.0	1390
IMR 4227	25.0	1159	30.0	1377
IMR 4198	28.0	1130	33.0	1353
IMR 3031	34.0	1137	39.0	1356

Accuracy Load:
IMR 3031 Powder, 34.0 Grains, 1137 F.P.S.

Factory Duplication Load:
IMR 3031 Powder, 38.5 Grains, 1326 F.P.S.

385 Grain Cast
BULLET #457124 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	10.0	1048	15.0	1335
2400	20.0	1191	24.0	1385

Accuracy Load:
Unique Powder, 10.0 Grains, 1048 F.P.S.

45/70 GOV'T. Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

45/70 GOVERNMENT Continued
1873 SPRINGFIELD (TRAP DOOR MODELS)

482 Grain Cast (w/Gas Check)
BULLET #457406 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	892	13.0	1114
2400	20.0	1104	23.0	1236
IMR 4227	27.0	1298	30.0	1438

Accuracy Load:
Unique Powder, 13.0 Grains, 1114 F.P.S.

552 Grain Cast (w/Gas Check)
BULLET #462560 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	844	12.0	1012
2400	18.0	995	22.0	1180
IMR 4227	20.0	995	25.0	1215

Accuracy Load:
IMR 4227 Powder, 25.0 Grains, 1215 F.P.S.

45/70 GOVERNMENT
1886 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .457" & .458"
Maximum Case Length ..... 2.105"
Trim-to Length ..... 2.100"
Maximum Overall Length (w/Bullet) 2.550"
Primer Size ..... Large Rifle
Lyman Shell Holder Number 17
Firearm used for Test ..... Winchester 1886
Barrel Length ..... 26" Twist ..... 1-22"

These loads are intended for the 1886 (lever action) Winchester rifle. They should only be used in those rifles which are in excellent condition. If the condition of your rifle is in any way questionable, use the lighter loadings which are listed for the 1873 Springfield.

300 Grain Short Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	30.0	1658	34.0	1870
Rx 7	38.0	1428	45.0	1811
IMR 4227	32.0	1612	37.0	1845
IMR 4198	36.0	1533	41.0	1779
IMR 3031	43.0	1557	50.0	1831
IMR 4320	47.0	1524	54.0	1782

Accuracy Load:
2400 Powder, 30.0 Grains, 1658 F.P.S.

405 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	27.0	1355	32.0	1582
Rx 7	34.0	1200	44.0	1590
IMR 4227	30.0	1380	35.0	1618
IMR 4198	33.0	1336	38.0	1557
IMR 3031	38.5	1312	48.0	1736
IMR 4320	45.0	1342	51.0	1647

Factory Duplication Load:
IMR 3031 Powder, 38.5 Grains, 1312 F.P.S.

292 Grain Cast
BULLET #457191 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	18.0	1497	20.0	1689
2400	24.0	1290	33.0	1623
IMR 3031	44.0	1517	50.0	1782

385 Grain Cast
BULLET #457124 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	14.0	1244	17.0	1408
2400	22.0	1230	31.0	1685
IMR 4198	36.0	1533	40.0	1666
IMR 3031	42.0	1492	48.0	1745

Accuracy Load:
IMR 3031 Powder, 48.0 Grains, 1745 F.P.S.

482 Grain Cast (w/Gas Check)
BULLET #457406 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	13.0	1112	16.0	1242
2400	22.0	1226	30.0	1607
IMR 4227	30.0	1472	33.0	1587
IMR 4198	30.0	1307	36.0	1567
IMR 3031	40.0	1451	46.0*	1677

Accuracy Load:
IMR 3031 Powder, 46.0* Grains, 1677 F.P.S.

552 Grain Cast (w/Gas Check)
BULLET #462560 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	12.0	1012	14.0	1100
2400	20.0	1096	26.0	1400
IMR 4227	23.0	1160	28.0	1335
IMR 4198	26.0	1162	32.0	1386
IMR 3031	34.0	1273	39.0*	1442

Accuracy Load:
IMR 4198 Powder, 32.0 Grains, 1386 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.458 WINCHESTER MAGNUM (11.5 x 63mm)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .457″ to .459″
Maximum Case Length ..... 2.500″
Trim-to Length ..... 2.495″
Maximum Overall Length (w/Bullet) 3.340″
Primer Size ..... Large Rifle
Lyman Shell Holder Number 13
Firearm used for Test ..... Winchester 70
Barrel Length ..... 22″ Twist ..... 1-14″

Our best test results were obtained when using the Winchester 120 primer.

Reloading die adjustments are critical with the heavily compressed loads. If the crimping and seating screw adjustments are not exactly on the bullet cannelure, the case will be dented or crushed in loading.

405 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	64.0	2036	71.0*	2237
IMR 4064	67.0	1949	74.0*	2127
IMR 4895	67.0	1988	75.0*	2217
IMR 4320	69.0	1988	77.0*	2247
IMR 4350	72.0	1733	80.0*	1923
Ball C2	71.0	1733	77.0*	1919
H 335	74.0	1815	80.0*	1984
H 380	72.0	1897	80.0*	2016

Accuracy Load:
IMR 3031 Powder, 71.0* Grains, 2237 F.P.S.

500 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	62.0	1890	69.0*	2053
IMR 4064	64 0	1785	71.0*	1968
IMR 4895	66.0	1886	73.0*	2066
IMR 4320	67.0	1858	75.0*	2066
IMR 4350	69.0	1630	77.0*	1855
Ball C2	70.0	1736	75.0*	1912
H 335	73.0	1821	78.0*	2016
H 380	71.0	1779	76.0*	1855
Rx 7	60.0	1709	65.0*	1937

Accuracy Load:
IMR 4895 Powder, 66.0 Grains, 1886 F.P.S.

385 Grain Cast

BULLET #457124 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	19.0	1375	23.0	1501
IMR 4198	54.0	1872	58.0	2070
IMR 3031	60.0	1872	69.0	2217

Accuracy Load:
IMR 3031 Powder, 60.0 Grains, 1872 F.P.S.

482 Grain Cast (w/Gas Check)

BULLET #457406 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	18.0	1206	21.0	1307
IMR 4198	50.0	1756	54.0	1903
IMR 3031	58.0	1865	67.0*	2100

Accuracy Load:
IMR 3031 Powder, 58.0 Grains, 1865 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

.460 WEATHERBY MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .457″ to .459″
Maximum Case Length ..... 2.913″
Trim-to Length ..... 2.903″
Maximum Overall Length (w/Bullet) 3.750″
Primer Size ..... See Cartridge Story
Lyman Shell Holder Number 17
Firearm used for Test .. Weatherby Mark V
Barrel Length ..... 26″ Twist ..... 1-16″

The data listed for this cartridge was obtained in a Weatherby rifle and is intended **for Weatherby rifles only**. The free-boring constructed into these firearms allow higher velocities at safe working pressures. For custom rifles which are not free-bored, maximum loads should be reduced a full 5%. Even then, they should be approached with caution.

The exclusive use of Federal 215 large rifle magnum primers is recommended by Weatherby Inc., for all jacketed bullet loads. Do not use the magnum primers, however, with cast bullet data. Use only standard large rifle primers with cast bullets.

Due to the heavy recoil of these rifles all bullets should be crimped in place.

500 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 3031	86.0	2183	96.0	2444
IMR 4064	96.0	2320	106.0	2538
IMR 4350	110.0	2392	121.0*	2624
H 380	100.0	2227	112.0	2481
4831	115.0	2262	128.0*	2481
H 450	115.0	2283	126.0*	2450

Accuracy Load:
4831 Powder, 125.0* Grains, 2444 F.P.S.

Factory Duplication Load:
IMR 4350 Powder, 120.0* Grains, 2583 F.P.S.

552 Grain Cast (w/Gas Check)

BULLET #462560 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	20.0	1150	28.0	1396

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your rifle, read preamble before using.

*Designates a compressed powder charge.

Lyman

GUN SIGHT CORPORATION

LYMAN METALLIC SIGHTS • RELOADING TOOLS • LYMAN TELESCOPIC SIGHTS • SHOTGUN CHOKES

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Dear Fellow Shooter:

No effort has been spared in making, this #44th Edition of the Lyman Handbook, the most useful reloading guide ever published.

All in all, over 60,000 rounds of ammunition were loaded and fired in more than 150 firearms during two years of testing. All these loads were very closely checked for velocity and pressures. Accuracy results with each load was carefully noted. Those loads which were finally selected as 'accuracy loads' were the very best developed in our test guns.

However, we are fully aware of the endless number of possible combinations that will, no doubt, give excellent accuracy. Here is where you can be of assistance to your fellow shooters.

Lyman would like to hear about your proven accuracy loads; provided of course, they fall between our suggested starting loads and our maximum listings. We will make every attempt to include these loads in future handbooks. Complete details of your load would be required, including pertinent information such as, brand name of components, number of rounds fired, and firearms used.

Your general comments on this handbook will also enable us to continue to fill your needs and desires in future handbooks.

Good Shooting

THE LYMAN GUN SIGHT CORPORATION

Edward A. Matunas

Edward A. Matunas
Ballistic & Reloading Technician

Reloading Pistol Cartridges

This chapter is devoted to the basic mechanics of reloading a pistol cartridge. We urge the beginner to read it carefully and to also read the preamble to his data section before attempting to reload. The preamble, located at the beginning of each data section is intended to help you interpret this data and insure its correct use.

CHOOSING YOUR TOOLS

The basic reloading tools needed by the pistol shooter differ little from those used by the rifle enthusiast. Both require a reloading press, a set of quality dies, a powder scale and a few minor accessories. The major difference is that the pistol reloader needs more ammunition to participate in his sport. While a hundred rounds of ammo will supply a very lively afternoon of varmint or target shooting for the rifleman, a like number of rounds will merely whet the shooting appetite of the average pistol man. Consequently, the pistol shooter should be able to turn out cartridges at a fairly rapid rate.

If your pistol reloading is to be geared to quantity output, you will probably want to take advantage of all the speed features offered by the tools and accessories that are available. Not that your initial investment must include a lot of accessory items. You should, however, take into consideration your future needs when making your first purchase.

For the illustrations and text of this section of the Handbook, we have chosen only basic tools. The turret press is shown because of the greater speed it will contribute to your future loading. To gain the full speed potential of this machine, other accessories such as a primer feed, and a powder measure may be added later.

TURRET RELOADING PRESS
Speed of operation should be considered when selecting a reloading press. Pictured is the Lyman Spar-T*.

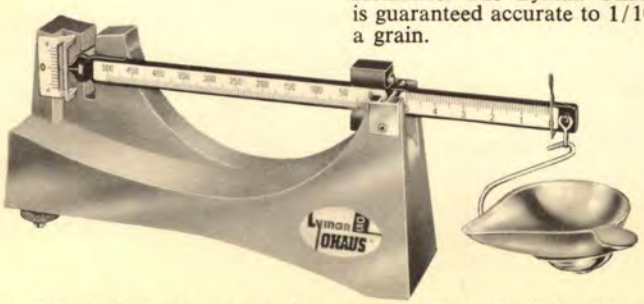
RAM, SHELL HOLDER & PRIMING ARM
These items are required to complete your press. Items shown are Lyman Spartan*.

POWDER FUNNEL

CHAMFERING REAMER

SIZING LUBRICANT

POWDER SCALE
A reliable and accurate scale is required for both safety and performance. The Lyman Ohaus D5 is guaranteed accurate to 1/10th of a grain.

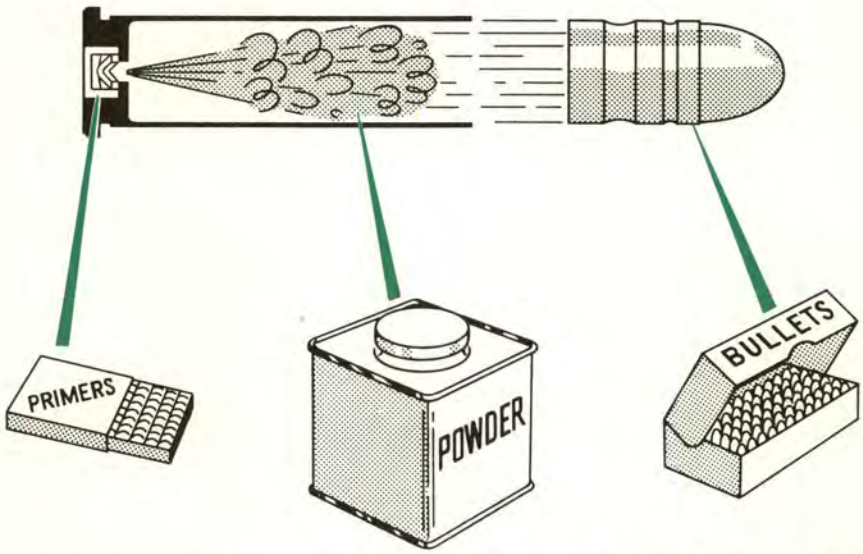


RELOADING DIE SETS
Quality reloading dies are a must. The set shown here is Lyman All-American*.

*Spar-T Sets which include the Spar-T Press, Ram, Shell Holder and Priming Arm, plus a complete set of All-American Dies are available. For complete information and prices, see the Catalog Section in the back of this Handbook.

CHOOSING YOUR COMPONENTS

When a cartridge is fired, three of the necessary components or parts of the original cartridge are used up. They are: (1) the primer. (2) the powder. (3) the bullet. Before this cartridge can be fired again, you must replace these components by reloading.



To select the proper components for your cartridge, turn to the Data page in this Handbook which lists data for your cartridge. Make a note of your correct primer size and bullet diameter. You will need to know these sizes when you purchase components.

At this time you must also decide on your powder charge and bullet weight. We suggest that you select a bullet weight with which you are familiar, and that you begin by loading the starting load listed for this bullet weight. Most dealers who handle reloading components can supply ready made bullets of the correct diameter and weight for your handgun. Later on you may wish to increase your savings and enjoyment by casting and sizing your own bullets. Complete information on making your own bullets is covered in the Reference Section under Accuracy With Cast Bullets.

GATHERING AND PREPARING CASES

You can always recognize a reloader by his almost fanatical quest for spent cartridges. He not only pockets each round that he fires, but he develops the habits of a pack rat in his zeal to con extra brass from his shooting associates. There is no mystery in his strange behavior. He simply has learned that cartridge brass is valuable, that he can turn it into extra shooting pleasure and save many dollars besides.

Regardless of the source from which you obtain your first cartridge cases, it is wise to separate them into lots and to keep a record of their history. For example, if you purchase

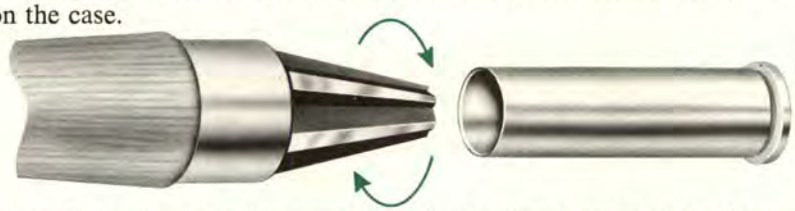
two boxes of leaded factory cartridges on a certain date, keep all one hundred rounds together and load them as one lot. Maintaining a record of the date of purchase and the number of times you loaded these cases will be helpful in determining your CASE LIFE, and you will benefit later when *TRIMMING is required.

*Trimming is necessary when your cases have lengthened after numerous firings. The trimming of cases is not covered here in the beginner section. See reference section on Cases for complete coverage.

Before each reloading check your cases for splits, or cracks about the necks and body. These cracks are indications of deteriorated brass probably due to excessive reloading. Reject all cases which show signs of defects, but before you discard them, flatten them with a pair of pliers to prevent their being used again.

Cracks and splits around the neck or body are indications of deteriorated brass probably due to excessive reloading.

You should remove the burrs from the mouth of the case after the first firing. This operation is called CHAMFERING and the small commercial hand reamer does the job easily and with uniformity. Hold your case in one hand while you lightly turn the reamer in the case mouth with the other hand. Remove very little case material and DO NOT cut a sharp knife edge on the case.



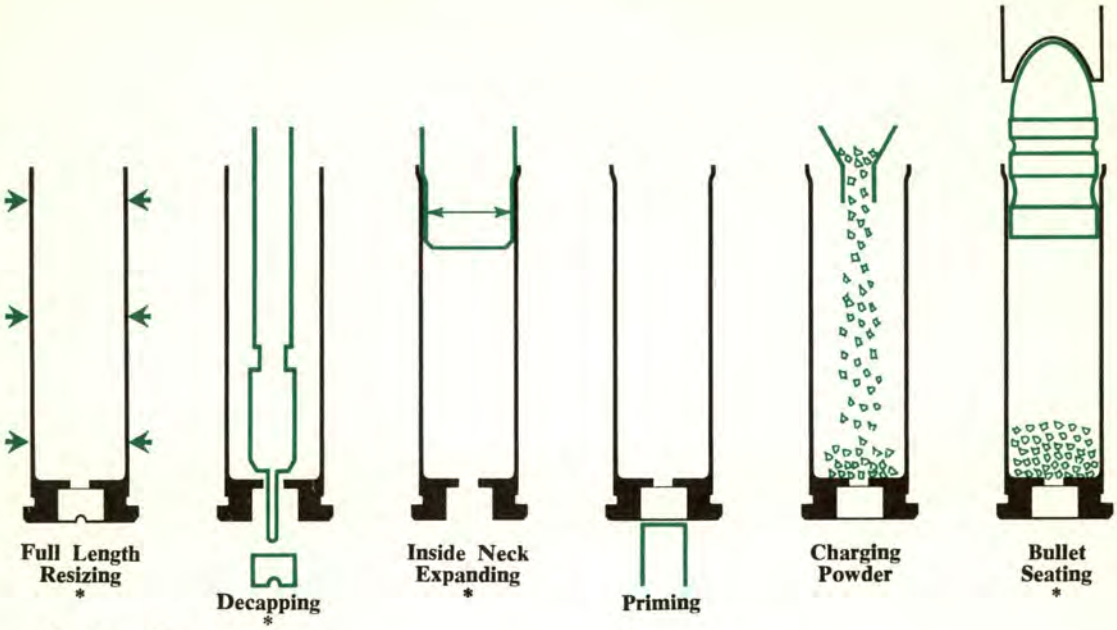
The last operation in preparing your cases for loading is to lubricate them with a suitable lubricant. This prevents the case from sticking in the resizing die and it removes dirt, or grit that might have collected. Wipe your cases carefully with a rag *SPARINGLY greased with Lyman Size-Ezy Lubricant and your cases are ready for loading. After reloading and before firing, always wipe your cases to remove the sizing lubricant.

*Too much lubricant will cause lube dents in the case when sizing. Cases dented in this manner may be used as the dents disappear on firing. It is not considered good reloading practice, however, and care should be taken.

MAKING CARTRIDGES

Putting a cartridge together is really a series of SIX very basic mechanical operations. Four of these six operations are performed by your reloading dies.

Let's first understand why these six operations are necessary to reload a pistol cartridge.



*Performed by your dies.

1. FULL LENGTH RESIZING: When a cartridge is fired, the brass walls of the case swell to the chamber size of the handgun. These walls remain pretty much at their expanded size and do not snap back to their original dimensions. Since all pistol chambers are not identical, cases fired in one pistol may not chamber in another. Even the chambers of a revolver cylinder will, in fact, vary from one to another. For this reason it is necessary to compress the walls of the case to a standard diameter which is acceptable to all handguns. This operation is called resizing.

2. DECAPPING: This operation is simply knocking out the old or fired primer.

3. INSIDE NECK EXPANDING: After the resizing operation, the neck of the case will be too small to accept the bullet. Inside neck expanding enlarges the inside diameter of the neck to a size which will receive and hold the bullet securely. For pistol cartridges, a two-step expanding plug is used to open up the inside of the case neck. The first step on this plug is slightly smaller than bullet diameter, while the second step is a few thousandths larger. The idea behind this is to allow the bullet to enter the case freely without shaving lead. The actual difference between the two steps is not visually apparent. The illustrations have been exaggerated for purposes of clarification.

4. PRIMING: This operation is simply inserting a new primer into the case.

5. INSERTING POWDER: This operation is merely weighing out and pouring a suitable charge of powder into the case.

6. BULLET SEATING: Obviously, we need a new bullet and its careful insertion into the case is the last step in the reloading process.

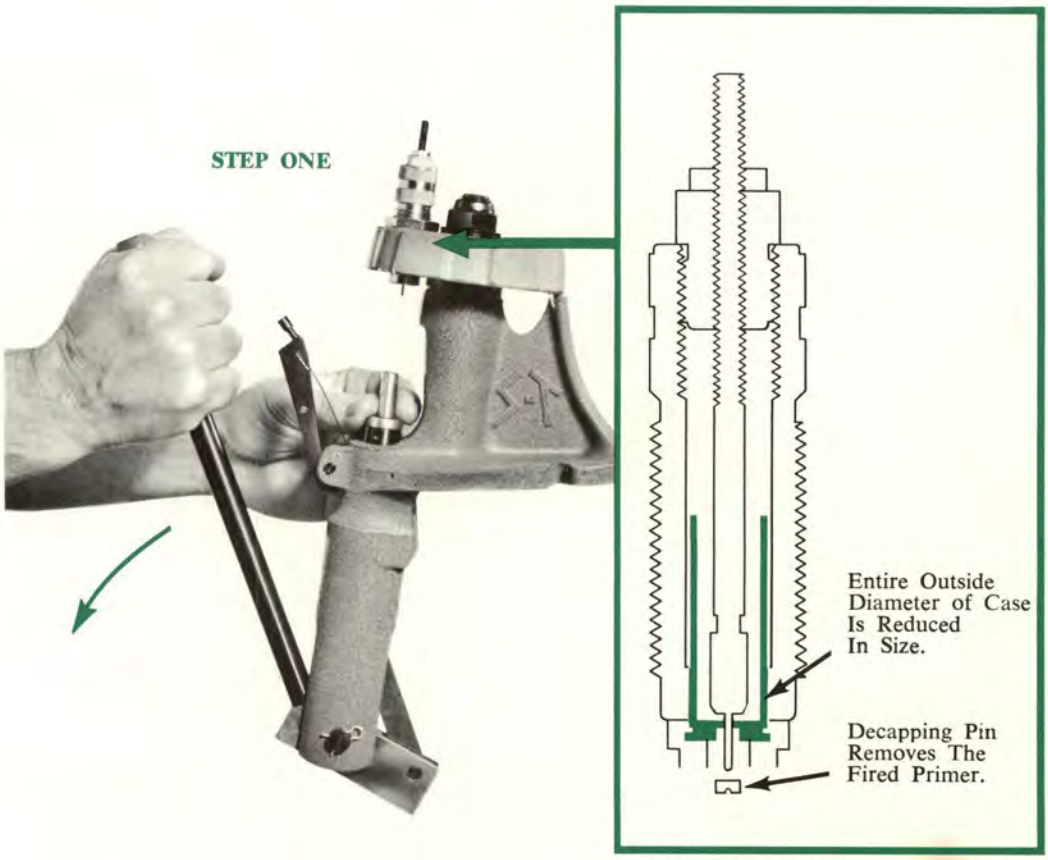
In the following text we will use a set of three reloading dies to perform four of the six operations. Further along in reloading you will hear of two-die sets and even four-die sets. Actually, the same basic operations are accomplished with all of these die sets. The difference is that two and three die sets combine some of the operations, while a four die set performs each operation separately. Because of their shape, most all pistol cartridges require the use of a three or four die set.

LET'S GET STARTED

We assume that your cases have been checked and lubricated, and that your reloading press has been assembled and mounted according to the instructions supplied with the tool. Most all reloading presses can be assembled to function either on the up, or down-stroke. In the following illustrations, the press is operating on the down-stroke. Now screw your Full Length Resizing Die into the head of your press and adjust it according to the instructions supplied with the die, and you are ready to start loading.

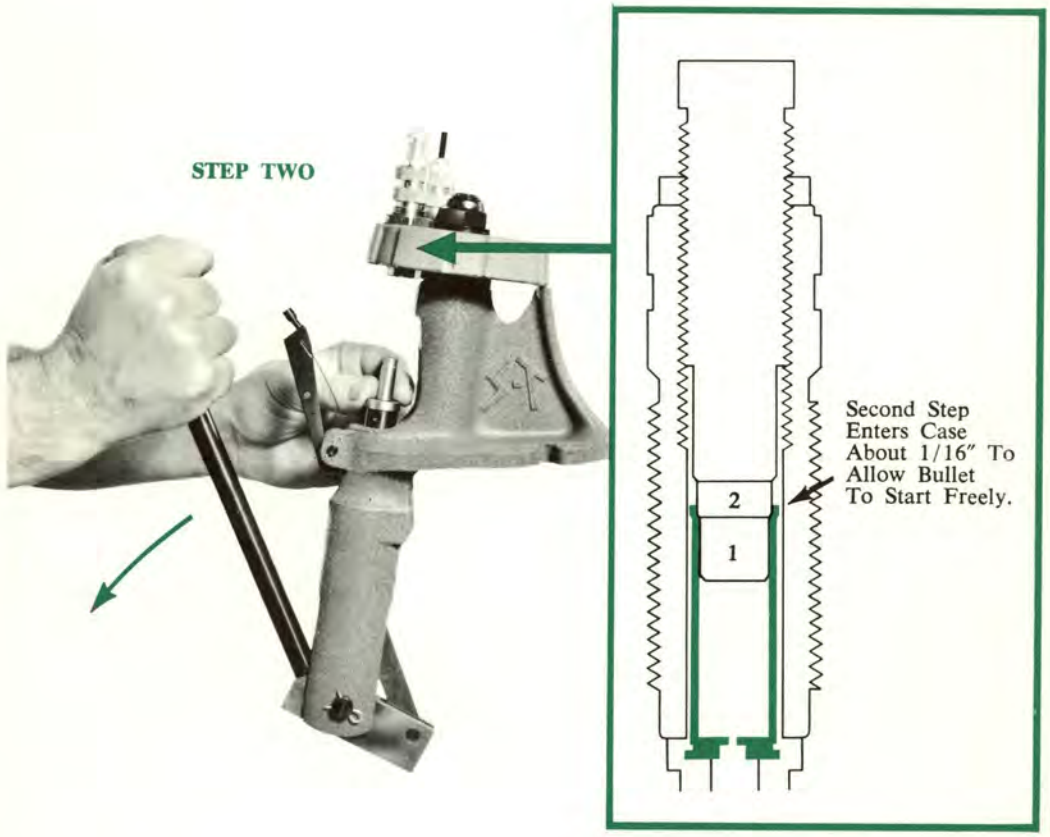
STEP ONE (Full-Length Resizing and Decapping)

Slip the head of your cartridge case into the shell holder, as shown in the illustration, and pull your press handle all the way down. If your die is adjusted correctly, your entire cartridge will enter the die flush to the shell holder. Note on the cutaway drawing how two of the original six reloading operations (full-length resizing and decapping) are accomplished by this step. Pull up on the press handle to remove your case from the die, and turn the turret head to the next station.



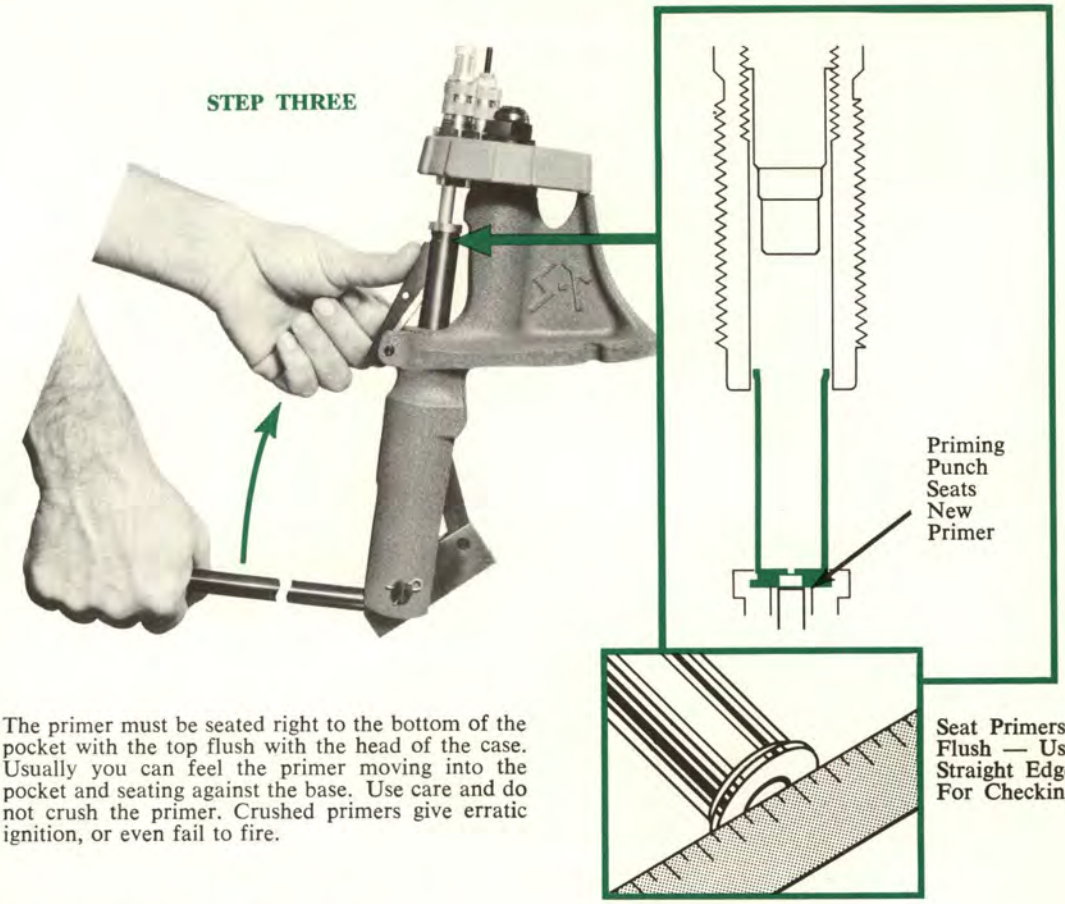
STEP TWO (Inside Neck Expanding)

Screw the Neck Expanding Die into the turret head and adjust it according to the instructions supplied with the die. Place your resized cartridge case into the shell holder and pull down on the press handle. Note in the cutaway drawing how the two-step plug enters and expands the case neck. Actually, there is only a few thousandths difference in diameter between the first and second step on the plug. This difference is not visually apparent. The illustration has been exaggerated for clarification.



STEP THREE (Priming)

The priming operation is accomplished as your case is withdrawn from the Neck Expanding Die. Place your new primer (cup side up) into the priming punch sleeve. Push the primer arm forward (toward the press) and pull up on the press handle. As the ram is lowered, the priming arm will enter the slot in the side of the ram and seat the primer.

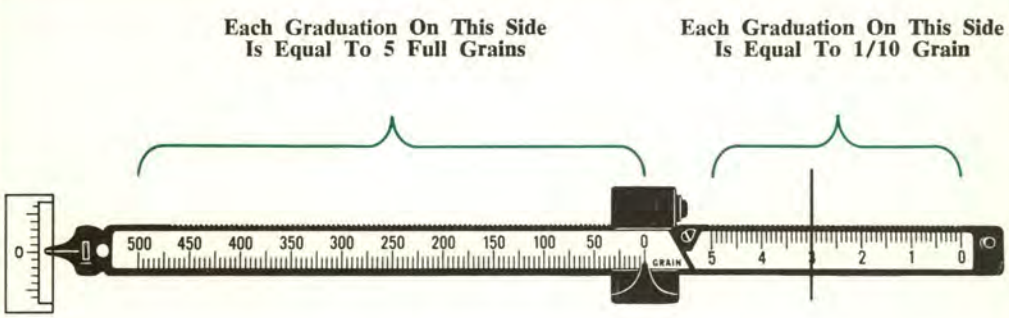


The primer must be seated right to the bottom of the pocket with the top flush with the head of the case. Usually you can feel the primer moving into the pocket and seating against the base. Use care and do not crush the primer. Crushed primers give erratic ignition, or even fail to fire.

STEP FOUR (Charging Powder)

Weighing and loading the powder charge is the one operation that requires the greatest care. Not that handling and storing modern smokeless powders is dangerous for, in fact, it is not. Working with modern powders is far less dangerous than handling gasoline, or cleaning fluid. You do want an accurate load, however, and you do want a cartridge that is safe to shoot in your handgun. Therefore, you must use care in choosing and weighing your powder charge.

The data listed in this Handbook shows the powders that are appropriate for your specific cartridge and bullet weight. It also lists the suggested weight of the powder charge in grains and fractions of grains. For example, 3.2 would be read as THREE and TWO TENTHS grains. 5.0 would be read as FIVE grains. Carefully level your powder scale according to the instructions that were packed with it, and set it to weigh your required charge. The illustration on the right shows how to adjust the scale.



The illustration shows the beam of a modern reloading scale. Note how it is graduated on both sides of the pivot point. The scale is set by moving the two weights (poise) to the proper graduations. The large poise (on the left) is used to obtain multiples of FIVE GRAINS, while the small poise (on the right) is used for FRACTIONS of a grain or SINGLE grains from one to five.

EXAMPLE: The illustration shows a setting of 3.0 grains. If you wish to increase this to 8.0 grains, simply move the large poise one notch to the left.

Using a spoon, slowly sprinkle small amounts of the powder into the scale pan until the beam comes into balance. The beam is in balance when the pointed end (extreme left) is exactly on the zero mark.

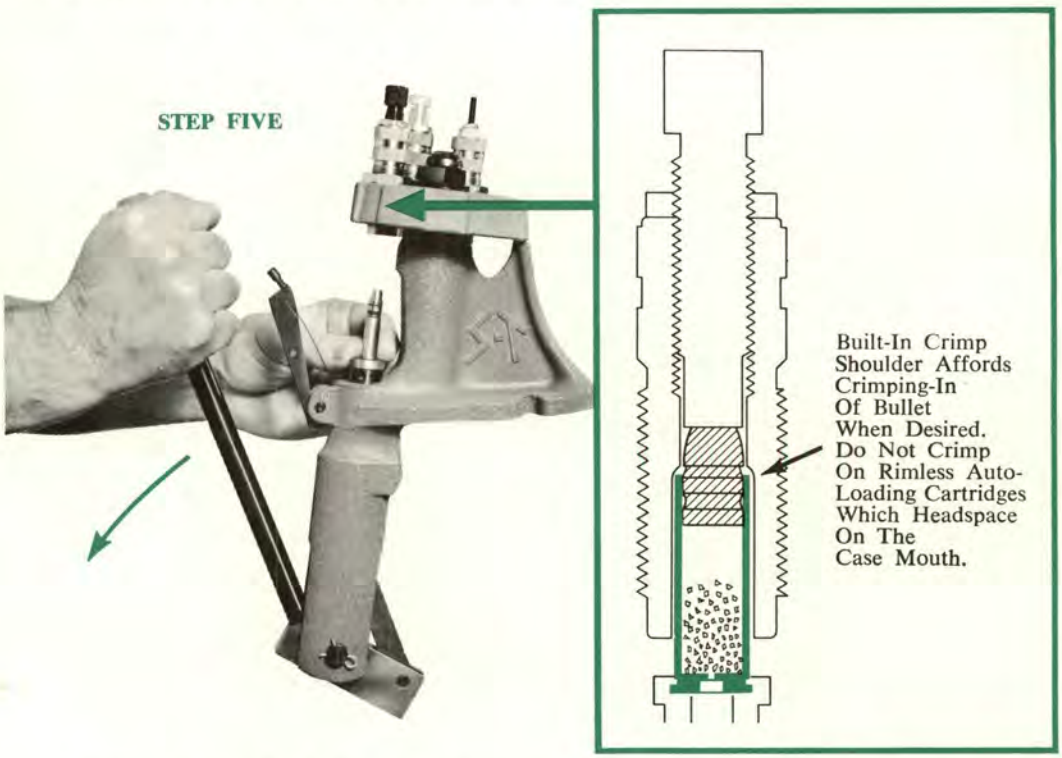
Carefully remove the pan and pour its contents into the cartridge case. Use the powder funnel to make sure that every bit of the powder enters the case. To avoid accidentally "DOUBLE CHARGING" a cartridge, you should develop a foolproof system of loading. A suggested method is to place all the uncharged cartridge cases on your left. As you pick up each case for charging, turn it up-side-down and shake it. This will insure that the case is empty. Turn the case right-side-up, charge it ,and place it carefully on your right.

To gain the advantage of greater speed, you may wish to purchase a powder measure. When used in conjunction with a scale, these machines dispense powder both rapidly and accurately.

STEP FIVE (Bullet Seating)

The last step in cartridge reloading is seating your new bullet. Make sure that the overall length of your finished round is not longer than the MAXIMUM OVERALL LENGTH listed in the Data section. This is important because a bullet that is set too far forward will not function properly in the magazine of your handgun. In revolvers, a long round will stop the cylinder from rotating. If you have any questions as to how long your cartridge should be, compare them with an unfired factory round. It is always wise to make up a sample cartridge (less powder and primer) and try it through the magazine or cylinder of your pistol to insure proper functioning.

The illustration shows how a bullet is seated. Screw the bullet seating die into the head of the press and adjust it according to the instructions supplied with the die. Place a primed, charged cartridge case in the shell holder and start a bullet in the mouth of the case. Pull the press handle all the way down. As the case enters the die, the bullet is pushed firmly into the neck of the case. Adjusting the seating screw controls the depth to which the bullet is seated. Adjusting the die body controls the crimp. Do not crimp on rimless auto-loading cartridges such as 45 Auto, 380 Auto, 9 M/M Luger or any case which headspaces on the mouth. On all other pistol cases, a crimp may be used if desired. Magnum cartridges, due to their heavy recoil, require the use of a crimp to hold the bullet securely.



This portion of the Handbook has covered the basics in pistol cartridge reloading. It is intended as a guide to help you get started. We also recommend that you read the preamble to your Data Section along with the Reference chapters of the Handbook.

After reading this material, if you still have questions, write to the Lyman Technical Staff (see page 6). They will be glad to offer assistance.

Pistol Data

The data contained in this Handbook supersedes all previous loading data published in preceding issues of the Lyman Reloading Handbook. All data has been tested by our technicians and found to be safe when loaded with our components and fired in our test fire arms under our controlled conditions. Since the Lyman Gun Sight Corporation has no control over the actual use of this data, nor choice of the firearms and components employed, no responsibility for the use of this data is assumed.

Preamble

THE FOLLOWING ARE RECOMMENDATIONS FOR USING THIS DATA.

STARTING LOAD — It is recommended that the reader begin with the suggested weight of powder listed in this bracket and work up slowly to his best performing load. Never decrease this charge as an increase in pressure could be encountered (see pressure chapter located in reference section).

MAXIMUM LOAD — All jacketed bullet loads which are classified as maximum were tested at a safe maximum working pressure in our firearms. These loads should not be exceeded, nor should they be quickly accepted by the reader as a safe working maximum for his pistol. Read the pressure chapter located in the reference section before using these loads.

The maximum loading listed for cast lead alloy bullets, while not always representative of maximum pressure, does indicate a maximum workable velocity for the powder, bullet and caliber (see accuracy with cast bullets in reference section).

ACCURACY LOAD — As accuracy is not consistently the same with all firearms, this load requires some interpretation by the reader. Where an accuracy load is listed, it merely indicates our most accurate test results with this particular bullet weight and caliber.

Slight variations of the load may be necessary to produce optimum accuracy for your pistol. Where this load is printed in a colored panel, it indicates that the load was at, or near, a maximum pressure level. Such a load requires that the reader work up to it slowly (see pressure chapter in reference section).

FACTORY DUPLICATION LOAD — Where possible, we have listed the load which duplicated factory velocity for the bullet weight tested. It should not be assumed that this load duplicates factory pressure. Where this load is printed in a colored panel, it indicates that the load was at, or near, a maximum pressure level. Such a load requires that the reader work up to it slowly (see pressure chapter in reference section).

VELOCITIES — The velocities printed in this section were recorded at a distance of fifteen feet from the muzzle of the test firearm.

POWDERS — While a wide variety of reloading powders were used in testing loads for this Handbook, all of these powders are not listed. In all instances, however, we have listed the powders which turned in the best results in our tests.

BULLETS — The bullet chapter, located in the reference section of this Handbook, lists the various bullets used in our testing. Refering to this chapter will help you with your selection of either a cast or jacketed bullet.

.22 REMINGTON JET

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .222″ to .223″
Maximum Case Length ..... 1.288″
Trim-to Length ..... 1.283″
Maximum Overall Length (w/Bullet) 1.659″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 1
Firearm used for Test ..... Smith & Wesson
Barrel Length ..... 6″ Twist ..... 1-15″

To insure proper extraction and functioning of the cylinder, remove all traces of lubricant from both cases and cylinder before firing. Standard .224″ diameter bullets which are normally used in 22 caliber guns are not for use in this cartridge. Use .222 diameter or .223 diameter bullets only.

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	11.0	1365	12.0	1937
SR 4756	5.0	1145	6.7	1524
IMR 4227	11.0	1575	13.5	1842

Accuracy Load:
IMR 4227 Powder, 11.0 Grains, 1575 F.P.S.

Factory Duplication Load:
2400 Powder, 12.0 Grains, 1937 F.P.S.

38 Grain Cast (w/Gas Check)
BULLET #225107 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	1038	3.5	1418
Unique	3.5	1230	5.5	1663
2400	11.0	1872	12.0	1968
SR 4756	5.0	1285	6.7	1675
IMR 4227	11.0	1742	13.5	2040

Accuracy Load:
Unique Powder, 3.5 Grains, 1230 F.P.S.

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	940	3.5	1340
Unique	3.5	1131	5.0	1392
2400	10.5	1745	11.5	1897
SR 4756	5.0	1313	6.2	1545
IMR 4227	10.5	1644	13.0	1992

Accuracy Load:
IMR 4227 Powder, 13.0 Grains, 1992 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.221 REMINGTON FIREBALL

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .224″
Maximum Case Length ..... 1.400″
Trim-to Length ..... 1.395″
Maximum Overall Length (w/Bullet) 1.830″
Primer Size ..... Small Rifle
Lyman Shell Holder Number 26
Firearm used for Test .... Remington XP100
Barrel Length .. 10-13/16″ Twist .. 1-12″

Very uniform velocities were obtained with this cartridge. Accuracy with I.M.R. 4198 powder and all jacketed bullets was excellent.

Accuracy with cast bullets, while not on par with jacketed bullet accuracy, was also good.

.221 REMINGTON FIREBALL Cont'd. Next Page

40 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4227	13.0	2141	16.5	2739
IMR 4198	16.0	2232	18.0*	2680
IMR 3031	16.0	1890	18.5*	2237

45 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4227	13.0	2074	16.0	2631
IMR 4198	16.0	2197	18.0*	2666
IMR 3031	16.0	1862	18.5*	2232

Accuracy Load:
IMR 4227 Powder, 13.0 Grains, 2074 F.P.S.

50 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
IMR 4227	12.0	2028	15.5	2512
IMR 4198	16.0	2227	17.8	2610
IMR 3031	16.0	1831	18.5	2202

Accuracy Load:
IMR 4198 Powder, 17.5 Grains, 2551 F.P.S.

Factory Duplication Load:
IMR 4198 Powder, 17.6 Grains, 2570 F.P.S.

45 Grain Cast (w/Gas Check)
BULLET #225438 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	2173	15.0	2732
IMR 4227	13.0	2237	16.0	2590

50 Grain Cast (w/Gas Check)
BULLET #225415 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
2400	12.0	2207	14.5	2512
IMR 4227	13.0	2272	15.5	2475

.30 LUGER
(7.65mm Parabellum)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .308" to .310"
Maximum Case Length ..... .850"
Trim-to Length ..... .845"
Maximum Overall Length (w/Bullet) 1.175"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 12
Firearm used for Test ..... Luger
Barrel Length .... 3¾" Twist .... 1-9.85"

With some pistols the listed starting loads may fail to function the action. Heavier loads, however, should be worked up to cautiously.

On cast bullet #313249, the case should be crimped on the leading edge of the first driving band. Some variations in groove diameters exist with these pistols and the barrel should be slugged for best results. Size cast bullets as near to exact groove diameter as possible.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.8	1058	4.2	1156
Red Dot	4.0	1057	4.5	1188
Unique	4.6	997	5.2	1113

Accuracy Load:
Unique Powder, 5.2 Grains, 1113 F.P.S.

93 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	1025	4.0	1123
Red Dot	3.9	1060	4.3	1136
Unique	4.4	1031	5.0	1147

Accuracy Load:
Bullseye Powder, 4.0 Grains, 1123 F.P.S.

Factory Duplication Load:
Red Dot Powder, 4.3 Grains, 1136 F.P.S.

84 Grain Cast
BULLET #313249 (#2 ALLOY)
CAN ALSO USE BULLET #311227 (84 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.8	1119	4.2	1197
Red Dot	4.0	1111	4.5	1242
Unique	4.6	1077	5.2	1192

Accuracy Load:
Bullseye Powder, 4.2 Grains, 1197 F.P.S.

.30 LUGER Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.30 LUGER (7.65mm PARABELLUM) Continued

93 Grain Cast
BULLET #313226 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	1051	4.1	1163
Red Dot	3.9	1077	4.4	1182
Unique	4.4	1053	5.1	1175

Accuracy Load:
Red Dot Powder, 4.4 Grains, 1182 F.P.S.

Factory Duplication Load:
Bullseye Powder, 4.0 Grains, 1136 F.P.S.

.30 MAUSER
(7.63mm Mauser)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .309″ to .311″
Maximum Case Length ..... .990″
Trim-to Length ..... .985″
Maximum Overall Length (w/Bullet) 1.381″
Primer Size ..... Small Pistol
Lyman Shell Holder Number 12
Firearm used for Test ..... Mauser Military
Barrel Length ..... 5½″ Twist ..... 1-8″

A fair amount of groove diameter variation exists in handguns of this caliber. We suggest that you slug your barrel before reloading. Jacketed bullets larger than .309″ are not recommended. If your barrel slugs larger than .309″, we suggest the use of cast bullets sized as close as possible to exact groove diameter.

85 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.2	1081	5.0	1217
Red Dot	5.0	1030	5.6	1103
Unique	5.2	1003	6.8	1187

Accuracy Load:
Bullseye Powder, 5.0 Grains, 1217 F.P.S.

Factory Duplication Load:
Bullseye Powder, 4.8 Grains, 1174 F.P.S.

84 Grain Cast
BULLET #313249 (#2 ALLOY)
CAN ALSO USE BULLET #311227 (84 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.2	1128	5.0	1243
Red Dot	5.0	1065	5.6	1115
Unique	5.2	1018	6.8	1193

Accuracy Load:
Bullseye Powder, 4.5 Grains, 1181 F.P.S.

Factory Duplication Load:
Bullseye Powder, 4.4 Grains, 1174 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.32 A.C.P.
(7.65mm Browning)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .308" to .312"
Maximum Case Length ..... .680"
Trim-to Length ..... .672"
Maximum Overall Length (w/Bullet) .984"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 23
Firearm used for Test ..... Mauser HSC
Barrel Length ..... 3" Twist ..... 1-16"

A wide variation in groove diameters is present in handguns of this caliber. The loads listed may be used with .311" jacketed bullets in pistols which have a groove diameter as small as .309".

Our test accuracy with all bullets (cast and jacketed) was generally poor.

71 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.5	603	2.2	825
Red Dot	1.7	705	2.5	937
Unique	2.0	571	3.1	945

Factory Duplication Load:
Bullseye Powder, 2.2 Grains, 825 F.P.S.

77 Grain Cast
BULLET #311252 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.5	712	2.2	973
Red Dot	1.7	680	2.5	994
Unique	2.0	692	3.1	995

.32 SMITH & WESSON

SPECIFICATIONS:

Bullet Dia. Cast ..... .310" to .313"
Maximum Case Length ..... .605"
Trim-to Length ..... .600"
Maximum Overall Length (w/Bullet) .930"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 9
Firearm used for Test .. Smith & Wesson 30
Barrel Length ..... 3" Twist ..... 1-18¾"

Maximum loads are intended for solid frame revolvers only and should be used with caution.

For top break revolvers (if gun is in good condition) use the suggested starting loads. Do not go higher as these pistols are of a relatively weak design.

Some variations in groove diameter are encountered in handguns chambered for this cartridge. Slug your barrel before reloading and size your cast bullets to as near groove diameter as possible.

77 Grain Cast
BULLET #311252 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.1	471	1.5	626
Red Dot	1.4	608	1.9	736
Unique	1.6	511	2.6	760

Accuracy Load:
Red Dot Powder, 1.9 Grains, 736 F.P.S.

84 Grain Cast
BULLET #313249 (#2 ALLOY)
CAN ALSO USE BULLET #311227 (84 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.0	442	1.4	608
Red Dot	1.3	629	1.7	698
Unique	1.5	476	2.5	745

Accuracy Load:
Bullseye Powder, 1.0 Grains, 442 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.32 SMITH & WESSON LONG

(.32 Colt New Police)

SPECIFICATIONS:

Bullet Dia. Cast ..... .310" to .313"
Maximum Case Length ..... .920"
Trim-to Length ..... .915"
Maximum Overall Length (w/Bullet) 1.280"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 9
Firearm used for Test .. Smith & Wesson 30
Barrel Length ..... 3" Twist ..... 1-18¾"

Maximum loads are intended for solid frame revolvers which are in good condition. In all instances they should be approached with caution.

Some variations in groove diameter are encountered in handguns chambered for this cartridge. Slug your barrel before reloading and size your cast bullets to as near groove diameter as possible.

77 Grain Cast
BULLET #311252 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.5	530	3.2	1004
Red Dot	1.9	575	3.5	1059
Unique	2.6	629	4.8	1111

Accuracy Load:
Bullseye Powder, 1.5 Grains, 530 F.P.S.

84 Grain Cast
BULLET #313249 (#2 ALLOY)
CAN ALSO USE BULLET #311227 (84 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.5	497	3.1	967
Red Dot	1.7	523	3.4	989
Unique	2.5	555	4.7	1078

Accuracy Load:
Bullseye Powder, 1.5 Grains, 497 F.P.S.

93 Grain Cast
BULLET #313226 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.4	462	2.7	846
Red Dot	1.7	504	3.0	847
Unique	2.5	568	4.3	992

Accuracy Load:
Bullseye Powder, 2.7 Grains, 462 F.P.S.

115 Grain Cast
BULLET #3118 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.3	452	1.8	613
Red Dot	1.6	494	2.1	639
Unique	2.0	501	3.5	823

Accuracy Load:
Red Dot Powder, 1.6 Grains, 494 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

9mm LUGER

(9mm Parabellum)

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .354" to .356"
Maximum Case Length ..... .754"
Trim-to Length ..... .751"
Maximum Overall Length (w/Bullet) 1.169"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 12
Firearm used for Test .. Smith & Wesson 39
Barrel Length ..... 4" Twist ..... 1-10"

The 9mm Luger cartridge headspaces on the case mouth. For this reason, the case should not be crimped and the trim-to-length should be adhered to closely. A short case, or a crimp on the mouth, can cause headspace problems.

While slight variations in groove diameters are encountered with pistols for this cartridge, most guns have a groove diameter of .354". Jacketed bullets of .355" can safely be used in all barrels ranging from .354" to .356".

9mm LUGER Cont'd. Next Page

95 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.7	975	5.2	1273
Red Dot	3.8	926	5.3	1234
Unique	4.8	1000	6.2	1275

Accuracy Load:
Unique Powder, 6.2 Grains, 1275 F.P.S.

124 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	909	4.8	1142
Red Dot	3.5	877	4.9	1107
Unique	4.3	891	5.8	1149

Accuracy Load:
Unique Powder, 5.5 Grains, 1096 F.P.S.

Factory Duplication Load:
Unique Powder, 5.5 Grains, 1096 F.P.S.

121 Grain Cast
BULLET #356402 (#2 ALLOY)
CAN ALSO USE BULLET #358242

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	990	4.8	1212
Red Dot	3.6	966	5.0	1197
Unique	4.4	999	6.0	1243
Herco	4.6	952	6.1	1183

Accuracy Load:
Bullseye Powder, 3.5 Grains, 990 F.P.S.

158 Grain Cast
BULLET #358311 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	869	3.5	961
Red Dot	3.0	858	3.6	963
Unique	3.5	883	4.5	1039
Herco	3.6	840	4.6	1010

Accuracy Load:
Bullseye Powder, 3.0 Grains, 869 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.357 MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .356″ to .358″
Maximum Case Length ..... 1.290″
Trim-to Length ..... 1.285″
Maximum Overall Length (w/Bullet) 1.590″
Primer Size ..... Small Pistol
Lyman Shell Holder Number 1
Firearm used for Test .. Smith & Wesson 27
Barrel Length ..... 5″ Twist ..... 1-18¾″

Depending upon their manufacture, some variation in groove diameter exists in these handguns. It is wise to slug your barrel before reloading and size cast bullets to exact groove diameter.

In order to hold your maximum overall length to below 1.590″, it is sometimes necessary to crimp cast bullets on the forward edge of the first driving band.

Velocities for half-jacketed bullets must be kept above 750 F.P.S. to prevent jackets from lodging in the barrel.

.357 MAGNUM Cont'd. Next Page

146 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	971	8.5	1300
2400	11.5	978	15.5	1323
SR 7625	6.1	845	6.5	971
SR 4756	7.0	858	9.0	1189
IMR 4227	11.5	830	15.5	1168

Accuracy Load:
Unique Powder, 8.5 Grains, 1300 F.P.S.

158 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	801	8.0	1170
2400	11.5	918	15.0	1227
SR 7625	6.0	840	6.5	930
SR 4756	7.0	835	8.8	1108
IMR 4227	11.5	776	15.0	1128

Accuracy Load:
Unique Powder, 8.0 Grains, 1170 F.P.S.

160 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	5.5	832	7.5	1152
2400	11.5	979	14.5	1221
SR 7625	5.9	890	6.4	960
SR 4756	7.0	835	8.7	1081
IMR 4227	11.5	868	14.8	1109

121 Grain Cast

BULLET #358242 (#2 ALLOY)
CAN ALSO USE BULLET #356402 (121 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	747	4.5	998
Unique	4.0	715	8.5	1387
Herco	7.0	1052	11.9*	1504
2400	11.0	900	15.5	1274
SR 7625	5.5	883	7.0	1131
SR 4756	6.0	750	9.8	1402
IMR 4227	9.5	606	15.5	1198

Accuracy Load:
Bullseye Powder, 3.0 Grains, 764 F.P.S.

141 Grain Cast

BULLET #358495 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	764	4.5	1011
Unique	4.0	752	8.5	1440
Herco	7.0	1085	11.8*	1543
2400	11.0	1026	15.5	1449
SR 7625	5.5	975	6.9	1200
SR 4756	6.0	801	9.7	1311
IMR 4227	9.5	746	15.5	1332

Accuracy Load:
Bullseye Powder, 4.5 Grains, 1011 F.P.S.

150 Grain Cast

BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	705	4.5	942
Unique	4.0	690	8.0	1280
Herco	7.0	1030	11.7*	1449
2400	11.0	934	15.0	1280
SR 7625	5.5	848	6.8	1082
SR 4756	6.0	754	9.6	1299
IMR 4227	9.5	657	15.5	1230

Accuracy Load:
SR 7625 Powder, 6.8 Grains, 1082 F.P.S.

158 Grain Cast (w/Gas Check)

BULLET #358156 (#2 ALLOY)
CAN ALSO USE BULLET #358311 (158 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	682	4.5	928
Unique	4.0	680	8.0	1250
Herco	7.0	1025	11.6*	1388
2400	11.0	956	15.0	1270
SR 7625	5.5	846	6.7	1064
SR 4756	6.0	712	9.5	1258
IMR 4227	9.5	725	15.0	1194

Accuracy Load:
2400 Powder, 15.0 Grains, 1270 F.P.S.

Factory Duplication Load:
Herco Powder, 11.6* Grains, 1388 F.P.S.

168 Grain Cast

BULLET #358429 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	739	4.0	893
Unique	4.0	739	7.0	1157
Herco	7.0	1073	10.0*	1324
2400	11.0	1010	13.0	1180
SR 7625	5.0	896	6.0	1050
SR 4756	6.0	863	8.8	1182
IMR 4227	9.5	772	14.5	1212

Accuracy Load:
Unique Powder, 7.0 Grains, 1157 F.P.S.

195 Grain Cast

BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	720	3.5	782
Unique	4.0	719	5.5	942
Herco	6.0	944	7.5*	1097
2400	9.5	877	11.0	1018
SR 7625	4.2	763	5.2	894
SR 4756	5.5	813	7.2	1024
IMR 4227	9.5	792	12.2	1020

Accuracy Load:
Unique Powder, 5.5 Grains, 942 F.P.S.

NOTE – Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.380 AUTO

(9mm Corto)
(9mm Short)

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .355″
Maximum Case Length ..... .680″
Trim-to Length ..... .677″
Maximum Overall Length (w/Bullet) .984″
Primer Size ..... Small Pistol
Lyman Shell Holder Number 26
Firearm used for Test ..... Husqvarna
Barrel Length ..... 5″ Twist ..... 1-16″

While a wide variation in groove diameters exists (as large as .362″) in pistols chambered for this cartridge, the use of bullets larger than .355″ is usually not possible, this is due to the chamber and case dimensions.

A large diameter bullet will bulge the case to the point where the cartridge will not chamber. If the groove diameter of your pistol runs on the large size, accuracy will be poor and there is little you can do about it.

Heavier cast bullets of .355″ diameter will sometimes cause a slight case bulge with some lots of brass. This is due to inside case taper and so long as the cartridge will chamber and function it can be ignored.

95 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.4	841	2.9	982
Red Dot	2.6	850	3.0	1004
Unique	3.9	996	4.5	1155

Accuracy Load:
Bullseye Powder, 2.9 Grains, 982 F.P.S.

Factory Duplication Load:
Bullseye Powder, 2.9 Grains, 982 F.P.S.

92 Grain Cast

BULLET #358242 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.4	869	2.9	995
Red Dot	2.6	884	3.0	960
Unique	3.9	952	4.5	1155

Accuracy Load:
Bullseye Powder, 2.9 Grains, 995 F.P.S.

121 Grain Cast

BULLET #358242 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.6	661	1.9	746
Red Dot	1.7	689	2.0	729
Unique	3.5	939	3.9	1060

Accuracy Load:
Bullseye Powder, 1.9 Grains, 746 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.38 SUPER AUTO

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .354″ to .356″
Maximum Case Length ..... .900″
Trim-to Length ..... .895″
Maximum Overall Length (w/Bullet) 1.280″
Primer Size ..... Small Pistol
Lyman Shell Holder Number 12
Firearm used for Test ..... Colt
Barrel Length ..... 5″ Twist ..... 1-16″

These loads are intended only for guns which are chambered for the "Super Auto" cartridge.

For the "Standard 38 Auto" cartridge, it is recommended that you reduce the starting load by 1/2 grain and work up to the listed starting load. In these pistols, use only loads which call for bullets of 133 grains or less.

As this cartridge headspaces on the rim, it may be crimped if desired.

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130 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.4	870	5.0	1149
Unique	5.0	961	7.7	1303
Herco	5.5	974	7.7	1256
Red Dot	3.5	825	5.0	1006

Accuracy Load:
Unique Powder, 7.7 Grains, 1398 F.P.S.

Factory Duplication Load:
Bullseye Powder, 5.0 Grains, 1149 F.P.S.

121 Grain Cast
BULLET #358242 (#2 ALLOY)
CAN ALSO USE BULLET #356402 (121 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.3	989	4.7	1169
Unique	5.0	1057	7.0	1389
Herco	5.5	1036	7.0	1200
Red Dot	3.5	886	5.0	1185

Accuracy Load:
Bullseye Powder, 4.7 Grains, 1169 F.P.S.

133 Grain Cast
BULLET #358480 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.3	924	4.6	1153
Unique	5.0	1040	6.9	1351
Herco	5.5	1019	6.9	1200
Red Dot	3.5	890	4.9	1016

Accuracy Load:
Bullseye Powder, 4.6 Grains, 1153 F.P.S.

150 Grain Cast
BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.3	877	4.0	995
Unique	5.0	1005	6.2	1183
Herco	5.5	975	6.2	1048
Red Dot	3.5	845	4.1	946

Accuracy Load:
Unique Powder, 6.2 Grains, 1183 F.P.S.

158 Grain Cast
BULLET #358311 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.3	903	3.8	1009
Unique	5.0	1058	6.0	1194
Herco	5.5	1050	6.0	1125
Red Dot	3.5	910	3.9	981

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.38 SPECIAL

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .355″ to .359″
Maximum Case Length ..... 1.155″
Trim-to Length ..... 1.149″
Maximum Overall Length (w/Bullet) 1.550″
Primer Size ..... Small Pistol
Lyman Shell Holder Number 1
Firearm used for Test .. Smith & Wesson 14
Barrel Length ..... 6″ Twist ..... 1-18¾″

Occasionally handguns of various makes and models will vary from the groove diameters listed. It is wise to slug your barrel before selecting a sizing die. Size cast bullets to as near actual groove diameter as possible.

Cast bullet #358430 (in both 150 and 195 gr. weights) must exceed maximum overall length by .005″ to be seated correctly. All loads listed for this bullet take this extra length into consideration. We have used this bullet in its 195 grain weight for a 200 grain factory duplication load. This is due to the popularity of the particular bullet rather than an oversight.

Velocities for half-jacketed bullets must be kept to at least 725 F.P.S. to prevent jackets from lodging in the barrel. If a crimp is desired on a half jacketed bullet, it should be placed at the junction of the lead and the jacket.

.38 SPECIAL Cont'd. Next Page

146 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.5	755	5.6	961
2400	9.5	790	11.0	987

158 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.6	688	5.5	918
2400	9.5	785	11.0	960

160 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	4.5	724	5.3	915
2400	9.5	845	10.8	985

75 Grain Cast

BULLET #358101 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	607	3.0	788
Unique	3.0	577	5.0	842
SR 7625	3.0	469	4.0	570

Accuracy Load:
Bullseye Powder, 2.0 Grains, 607 F.P.S.

112 Grain Cast

BULLET #358425 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	572	3.8	954
Unique	3.5	682	6.9	1252
2400	8.0	656	12.5	1185
SR 7625	3.2	476	4.9	742
SR 4756	4.1	488	6.3	826
IMR 4227	7.0	416	9.9	757

Accuracy Load:
Bullseye Powder, 3.8 Grains, 954 F.P.S.

121 Grain Cast

BULLET #358242 (#2 ALLOY)
CAN ALSO USE BULLET #356402 (121 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	560	3.8	923
Unique	3.5	643	6.9	1132
2400	8.0	600	12.5	1120
SR 7625	3.2	465	4.9	786
SR 4756	4.1	450	6.3	821

Accuracy Load:
Unique Powder, 6.9 Grains, 1132 F.P.S.

141 Grain Cast

BULLET #358495 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	568	3.7	937
Unique	3.5	739	6.8	1295
2400	8.0	794	12.0	1233
SR 7625	3.1	550	4.8	966
SR 4756	4.0	562	6.2	982
IMR 4227	7.0	550	9.7	833

Accuracy Load:
Unique Powder, 6.8 Grains, 1295 F.P.S.

150 Grain Cast

BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	485	3.6	811
Unique	3.5	608	5.5	940
2400	8.0	627	11.5	1015
SR 7625	3.5	456	4.7	730
SR 4756	4.5	471	6.1	732

Accuracy Load:
Bullseye Powder, 3.6 Grains, 811 F.P.S.

Factory Duplication Load:
2400 Powder, 11.5 Grains, 1015 F.P.S.

158 Grain Cast

BULLET #358311 (#2 ALLOY)
CAN ALSO USE BULLET #358156 (158 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	519	3.5	826
Unique	3.5	660	5.4	1002
2400	8.0	690	11.0	1010
SR 7625	3.0	468	4.6	828
SR 4756	4.0	519	6.0	850
IMR 4227	7.0	504	9.5	755

Accuracy Load:
SR 4756 Powder, 6.0 Grains, 850 F.P.S.

Factory Duplication Load:
Bullseye Powder, 3.5 Grains, 826 F.P.S.

168 Grain Cast

BULLET #358429 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.5	660	3.3	788
Unique	3.0	585	5.0	913
2400	8.0	700	10.5	1005
SR 7625	3.0	508	4.1	746
SR 4756	4.0	486	5.6	765
IMR 4227	7.0	481	9.5	744

Accuracy Load:
2400 Powder, 8.0 Grains, 700 F.P.S.

195 Grain Cast

BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	530	2.7	658
Unique	3.0	572	4.1	772
2400	8.0	734	9.5	893
SR 7625	3.0	478	3.8	675
SR 4756	4.0	506	5.4	810
IMR 4227	7.0	494	9.5	748

Accuracy Load:
Unique Powder, 3.6 Grains, 671 F.P.S.

Factory Duplication Load:
Unique Powder, 3.8 Grains, 703 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.38 SMITH & WESSON

(380 MK1)
(38 Colt New Police)

SPECIFICATIONS:

Bullet Dia. Cast ..... .354" to .360"
Maximum Case Length ..... .775"
Trim-to Length ..... .765"
Maximum Overall Length (w/Bullet) 1.180"
Primer Size ..... Small Pistol
Lyman Shell Holder Number 21
Firearm used for Test ..... Smith & Wesson
Barrel Length ..... 4" Twist ..... 1-18¾"

These loads are intended only for solid frame revolvers which are in good condition.

As wide variations in groove diameters occur in guns chambered for this cartridge, we suggest that you slug your barrel before reloading. Bullets should be sized to as near groove diameter as possible.

121 Grain Cast

BULLET #358242 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	622	3.0	865
Red Dot	2.2	646	3.1	850
Unique	3.5	787	5.0	1069

133 Grain Cast

BULLET #358480 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	649	3.0	888
Red Dot	2.2	662	3.1	883
Unique	3.5	806	4.8	1041

Accuracy Load:
Bullseye Powder, 2.0 Grains, 649 F.P.S.

141 Grain Cast

BULLET #358495 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.6	600	2.0	732
Red Dot	1.7	598	2.1	653
Unique	3.0	813	3.8	925

Accuracy Load:
Bullseye Powder, 2.0 Grains, 732 F.P.S.

150 Grain Cast

BULLET #358430 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	2.0	598	2.9	810
Red Dot	2.1	578	3.0	740
Unique	3.5	731	4.6	973

Accuracy Load:
Bullseye Powder, 2.9 Grains, 810 F.P.S.

158 Grain Cast

BULLET #358311 (#2 ALLOY)
CAN ALSO USE BULLET
#358156 (158 Grs. w/Gas Check)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	1.8	607	2.5	763
Red Dot	1.8	543	2.6	751
Unique	3.0	719	4.0	892

Accuracy Load:
Bullseye Powder, 1.8 Grains, 607 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

38/40 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed ..... .400″
Bullet Dia. Cast ..... .400″ to .401″
Maximum Case Length ..... 1.305″
Trim-to Length ..... 1.300″
Maximum Overall Length (w/Bullet) 1.592″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 14B
Firearm used for Test ..... Colt S.A.A.
Barrel Length ..... 7½″ Twist ..... 1-36″

These loads are not to be used in handguns which were designed for black powder.

A great many revolvers which are chambered for this cartridge have groove and bore dimensions which are so far oversize that it is impossible to obtain accuracy. The chamber dimensions limit the diameter of the bullet and nothing can be done to make these oversize barrels shoot well.

180 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	715	9.5	1000

Accuracy Load:
Unique Powder, 8.0 Grains, 715 F.P.S.

172 Grain Cast
BULLET #40143 (#2 ALLOY)
CAN ALSO USE BULLET
#40188 (170 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	740	5.9	965
Unique	7.0	830	10.0	1105

Accuracy Load:
Unique Powder, 7.0 Grains, 830 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.41 MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed and Cast ..... .410″
Maximum Case Length ..... 1.290″
Trim-to Length ..... 1.285″
Maximum Overall Length (w/Bullet) 1.590″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 30
Firearm used for Test .. Smith & Wesson 57
Barrel Length ..... 6″ Twist ..... 1-18¾″

Our test results with this cartridge were excellent. Very uniform velocities and fine accuracy was obtained with all of the loads listed.

Correct seating of some cast bullets require that you exceed the maximum overall length listed. The proper overall lengths with these bullets are listed below. All data listed for these specific bullets takes this extra length into consideration.

Overall length with bullet #41032 — 1.663″
Overall length with bullet #41028 — 1.595″
Overall length with bullet #41026 — 1.720″

.41 MAGNUM Cont'd. Next Page

210 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.5	740	5.5	847
Unique	7.0	841	10.0	1208
2400	15.0	955	19.0	1272
P.B.	7.0	892	10.0	1220
SR 7625	7.0	822	9.1	1110
IMR 4227	18.0	1028	22.0*	1341

Accuracy Load:
Unique Powder, 7.0 Grains, 841 F.P.S.

199 Grain Cast
BULLET #41026 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	641	5.5	994
Unique	8.0	1132	11.0	1436
2400	16.0	1225	20.0	1533
P.B.	7.0	1087	10.2	1379
SR 7625	7.0	1074	9.3	1283
IMR 4227	18.0	1245	22.3	1448

Accuracy Load:
Unique Powder, 8.0 Grains, 1132 F.P.S.

212 Grain Cast
BULLET #41032 (#2 ALLOY)
CAN ALSO USE BULLET
#41028 (212 Grs.) #41027 (217 Grs.)
#410610 (215 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	736	5.5	909
Unique	7.0	941	10.0	1270
2400	14.0	957	18.8	1308
P.B.	7.0	1002	9.5	1230
SR 7625	7.0	946	8.9	1161
IMR 4227	18.0	1122	21.8*	1417

Accuracy Load:
Unique Powder, 10.0 Grains, 1270 F.P.S.

Factory Duplication Load:
2400 Powder, 14.4 Grains, 989 F.P.S.

240 Grain Cast
BULLET #410426 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	684	4.4	749
Unique	6.0	780	8.5	1058
2400	14.0	928	17.5	1169
P.B.	6.0	821	8.5	1078
SR 7625	6.0	740	7.0	876
IMR 4227	15.0	850	18.5	1097

Accuracy Load:
Unique Powder, 8.5 Grains, 1058 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.44 SPECIAL

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .427" to .431"
Maximum Case Length ..... 1.160"
Trim-to Length ..... 1.152"
Maximum Overall Length (w/Bullet) 1.615"
Primer Size ..... Large Pistol
Lyman Shell Holder Number 7
Firearm used for Test ..... Colt S.A.A.
Barrel Length ..... 5½" Twist ..... 1-16"

Considerable variations of groove diameter exist with handguns chambered for this cartridge. We recommend that you slug your barrel before reloading and size bullets to as near groove diameter as possible.

Velocities for half-jacketed bullets must be kept over 725 F.P.S. to prevent jackets from lodging in the barrel.

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.44 SPECIAL Continued

225 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
SR 4756	8.0	782	10.0	1036
IMR 4227	16.0	921	18.5	1111
2400	12.0	729	15.0	990

Accuracy Load:
SR 4756 Powder, 10.0 Grains, 1036 F.P.S.

240 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
SR 4756	7.0	609	9.0	836
IMR 4227	15.0	813	17.5	943
2400	12.0	689	14.0	856

180 Grain Cast
BULLET #429348 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	691	6.8	1033
Unique	7.0	877	11.5	1351
2400	13.0	714	20.0	1265
SR 4756	7.0	617	10.4	1015
IMR 4227	14.0	683	21.0	1028

Accuracy Load:
Bullseye Powder, 4.0 Grains, 691 F.P.S.

205 Grain Cast (w/Gas Check)
BULLET #429303 (#2 ALLOY)
CAN ALSO USE BULLET #42798 (205 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	558	5.9	951
Unique	6.0	793	9.7	1197
2400	13.0	826	19.5	1260
SR 4756	7.0	684	10.3	1069
IMR 4227	14.0	800	21.0	1226

Accuracy Load:
Bullseye Powder, 3.0 Grains, 558 F.P.S.

215 Grain Cast (w/Gas Check)
BULLET #429215 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	544	5.6	893
Unique	6.0	775	8.9	1093
2400	13.0	800	19.0	1215
SR 4756	7.0	670	10.0	1017
IMR 4227	14.0	795	20.0	1095

Accuracy Load:
Bullseye Powder, 3.0 Grains, 544 F.P.S.

232 Grain Cast
BULLET #429360 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	573	5.3	863
Unique	5.0	675	8.1	1047
2400	13.0	877	18.5	1200
SR 4756	7.0	660	9.9	1015
IMR 4227	14.0	790	19.0	1092

Accuracy Load:
Bullseye Powder, 5.3 Grains, 863 F.P.S.

245 Grain Cast
BULLET #429383 (#2 ALLOY)
CAN ALSO USE BULLET #429421 (245 Grs.)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	565	5.0	792
Unique	5.0	665	8.0	1000
2400	12.5	795	17.7	1155
SR 4756	7.0	655	9.6	970
IMR 4227	14.0	780	18.3	1050

Accuracy Load:
Bullseye Powder, 4.0 Grains, 689 F.P.S.

Factory Duplication Load:
Bullseye Powder, 4.1 Grains, 697 F.P.S.

250 Grain Cast (w/Gas Check)
BULLET #429244 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	548	4.9	782
Unique	5.0	657	7.9	975
2400	12.5	790	17.5	1150
SR 4756	7.0	650	9.5	965
IMR 4227	14.0	775	18.0	1030

Accuracy Load:
Bullseye Powder, 4.9 Grains, 782 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.44 REMINGTON MAGNUM

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .428″ to .431″
Maximum Case Length ..... 1.285″
Trim-to Length ..... 1.280″
Maximum Overall Length (w/Bullet) 1.610″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 7
Firearm used for Test .. Smith & Wesson 29
Barrel Length ..... 6½″ Twist ..... 1-20″

This cartridge requires a hard crimp on all of the heavier loadings to prevent bullet movement when the gun is under recoil.

Proper seating of some cast bullets requires that you exceed the maximum overall length listed. The correct overall lengths for these specific bullets is shown below. Data for these bullets takes this extra length into consideration.

Overall length with bullet #429303 — 1.692″
Overall length with bullet #429215 — 1.645″
Overall length with bullet #429360 — 1.660″
Overall length with bullet #429244 — 1.680″

225 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	1035	13.0	1307
Herco	11.0	1087	14.5*	1296
2400	18.0	1090	23.0*	1434
SR 4756	12.0	1066	16.5*	1408
IMR 4227	21.0	1188	26.0*	1432
AL-8	15.0	1062	19.0*	1329

Accuracy Load:
IMR 4227 Powder, 26.0* Grains, 1432 F.P.S.

240 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	9.0	974	12.0	1237
Herco	10.0	920	13.5*	1116
2400	18.0	1022	22.0*	1300
SR 4756	12.0	1042	15.5	1252
IMR 4227	20.0	991	25.0*	1331
AL-8	14.0	949	18.0*	1190

Accuracy Load:
IMR 4227 Powder, 25.0* Grains, 1331 F.P.S.

180 Grain Cast

BULLET #429348 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	5.0	810	7.0	1003
Unique	8.0	918	13.0	1403
Herco	11.0	1094	15.0	1313
2400	18.0	990	24.0*	1495
SR 4756	12.0	1069	17.0	1517
IMR 4227	19.0	1012	27.0	1375
AL-8	14.0	1055	20.0	1390

Accuracy Load:
Unique Powder, 8.0 Grains, 918 F.P.S.

205 Grain Cast (w/Gas Check)

BULLET #429303 (#2 ALLOY)
CAN ALSO USE BULLET #42798

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	5.0	795	7.0	1031
Unique	9.0	1050	13.0	1420
Herco	11.0	1121	15.0	1357
2400	18.0	995	24.0*	1430
SR 4756	12.0	1152	17.0	1466
IMR 4227	19.0	988	27.0*	1472
AL-8	14.0	1088	20.0*	1388

Accuracy Load:
IMR 4227 Powder, 27.0* Grains, 1472 F.P.S.

215 Grain Cast (w/Gas Check)

BULLET #429215 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	5.0	768	7.0	1004
Unique	9.0	1045	13.0	1364
Herco	11.0	1060	15.0	1316
2400	18.0	1065	24.0*	1420
SR 4756	12.0	1110	17.0	1418
IMR 4227	19.0	879	27.0*	1476
AL-8	14.0	1025	20.0*	1380

Accuracy Load:
Unique Powder, 9.0 Grains, 1024 F.P.S.

232 Grain Cast

BULLET #429360 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	687	6.5	962
Unique	9.0	1040	12.0	1330
Herco	10.0	1054	14.0	1284
2400	18.0	1095	23.0*	1379
SR 4756	12.0	1100	16.0	1393
IMR 4227	19.0	1022	26.0*	1459
AL-8	14.0	1055	19.0*	1345

Accuracy Load:
IMR 4227 Powder, 19.0 Grains, 1022 F.P.S.

.44 REMINGTON MAGNUM Cont'd. Next Page

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

250 Grain Cast (w/Gas Check)
BULLET #429244 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	647	6.0	858
Unique	7.0	819	11.0	1200
Herco	10.0	982	13.0	1160
2400	18.0	1088	22.0*	1295
SR 4756	11.0	1017	15.0	1284
IMR 4227	19.0	988	25.0*	1390
AL-8	13.0	882	18.0*	1245

Accuracy Load:
IMR 4227 Powder, 25.0* Grains, 1390 F.P.S.

44/40 WINCHESTER

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .425″ to .429″
Maximum Case Length ..... 1.305″
Trim-to Length ..... 1.300″
Maximum Overall Length (w/Bullet) 1.592″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 14B
Firearm used for Test ..... Colt S.A.A.
Barrel Length ..... 7½″ Twist ..... 1-20″

These loads are not to be used in handguns which were designed for black powder.

As a wide variation in groove diameters exist with handguns chambered for this cartridge, it is recommended that you slug your barrel. Size cast bullets as near to actual groove diameter as possible.

Jacketed bullets which are within .001″ of the groove diameter can be used successfully.

200 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	5.0	790	6.7	965
Unique	8.0	825	11.1	1125

205 Grain Cast
BULLET #42798 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	695	6.6	945
Unique	6.0	750	10.9	1095

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.45 A.C.P.

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .450″ to .453″
Maximum Case Length ..... .898″
Trim-to Length ..... .895″
Maximum Overall Length (w/Bullet) 1.275″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 2
Firearm used for Test .. Colt, Gov't. Model
Barrel Length ..... 5″ Twist ..... 1-16″

As this cartridge headspaces on the case mouth, the trim-to-length must be adhered to closely and the case should not be crimped. A short case, or a crimp on the case mouth, can cause headspace problems.

While groove dimensions for these handguns will vary from .450″ to .453″ the reloader will sometimes have difficulty if he uses a bullet over .451″ diameter. Maximum case and chamber dimensions usually provide for a bullet of .451″ and larger bullets may bulge cases to the point where they fail to chamber.

Most pistols (unless they are altered) will not feed wad cutter type bullets such as #452389 and #452460. This also applies to the 185 grain jacketed wad cutter.

185 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	669	4.9	873
Red Dot	4.0	688	5.5	928
Unique	5.0	672	7.2	994
P.B.	4.8	762	5.8	900
SR 4756	6.2	606	6.6	664
SR 7625	5.2	639	6.2	840

Accuracy Load:
Unique Powder, 5.0 Grains, 672 F.P.S.

Factory Duplication Load:
Unique Powder, 5.9 Grains, 822 F.P.S.

230 Grain Jacketed

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	622	4.6	798
Red Dot	4.0	652	5.3	818
Unique	5.0	664	7.2	960
P.B.	4.5	650	5.6	835
SR 4756	6.1	636	6.5	690
SR 7625	5.1	673	6.1	878

Accuracy Load:
Bullseye Powder, 3.5 Grains, 622 F.P.S.

Factory Duplication Load:
Unique Powder, 6.5 Grains, 877 F.P.S.

185 Grain Cast
BULLET #452389 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	778	4.9	966
Red Dot	4.0	805	5.5	1011
Unique	5.0	795	7.2	1081
P.B.	4.8	845	5.8	1000
SR 4756	6.3	755	6.6	793
SR 7625	5.2	778	6.2	1005

Accuracy Load:
Bullseye Powder, 4.9 Grains, 966 F.P.S.

200 Grain Cast
BULLET #452460 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	731	4.8	913
Red Dot	4.0	769	5.4	959
Unique	5.0	752	7.2	1041
P.B.	4.5	738	5.8	964
SR 4756	6.2	715	6.5	737
SR 7625	5.2	763	6.2	864

Accuracy Load:
Bullseye Powder, 3.5 Grains, 731 F.P.S.

225 Grain Cast
BULLET #452374 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.5	702	4.7	854
Red Dot	4.0	700	5.3	880
Unique	5.0	711	7.2	967
P.B.	4.5	655	5.7	840
SR 4756	6.2	638	6.5	653
SR 7625	5.1	655	6.1	827

Accuracy Load:
Bullseye Powder, 3.5 Grains, 702 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.45 AUTO RIM

SPECIFICATIONS:

Bullet Dia. Cast ..... .450" to .452"
Maximum Case Length ..... .898"
Trim-to Length ..... .894"
Maximum Overall Length (w/Bullet) 1.275"
Primer Size ..... Large Pistol
Lyman Shell Holder Number 14A
Firearm used for Test .. Smith & Wesson 25
Barrel Length ..... 6½" Twist ..... 1-16"

Heavier loads for this cartridge should be lightly crimped to prevent bullets from moving when the gun is under recoil.

185 Grain Cast
BULLET #452389 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	600	4.5	855
Red Dot	4.0	765	5.2	930
Unique	5.0	724	7.2	1028
P.B.	4.8	763	5.6	900
SR 7625	4.8	638	5.6	765
SR 4756	6.2	609	6.6	657

Accuracy Load:
Red Dot Powder, 5.2 Grains, 1075 F.P.S.

200 Grain Cast
BULLET #452460 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	586	4.4	803
Red Dot	4.0	755	5.1	890
Unique	5.0	714	7.1	997
P.B.	4.5	687	5.5	865
SR 7625	4.5	577	5.5	718
SR 4756	6.2	617	6.5	662

Accuracy Load:
Bullseye Powder, 4.4 Grains, 803 F.P.S.

225 Grain Cast
BULLET #452374 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	593	4.4	815
Red Dot	4.0	738	5.0	880
Unique	5.0	729	7.0	988
P.B.	4.5	645	5.4	850
SR 7625	4.5	595	5.4	751
SR 4756	6.0	621	6.4	689

Accuracy Load:
Red Dot Powder, 5.0 Grains, 880 F.P.S.

238 Grain Cast
BULLET #452423 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	3.0	613	4.2	785
Red Dot	4.0	722	4.8	845
Unique	5.0	735	6.8	981
P.B.	4.5	751	5.2	847
SR 7625	4.5	627	5.2	777
SR 4756	5.4	568	6.0	636

Accuracy Load:
P.B. Powder, 5.2 Grains, 847 F.P.S.

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

.45 COLT

SPECIFICATIONS:

Bullet Dia. Jacketed & Cast .. .450″ to .454″
Maximum Case Length ..... 1.285″
Trim-to Length ..... 1.280″
Maximum Overall Length (w/Bullet) 1.600″
Primer Size ..... Large Pistol
Lyman Shell Holder Number 11
Firearm used for Test ..... Colt S.A.
Barrel Length ..... 5½″ Twist ..... 1-16″

Pre-World War II model revolvers normally have a groove diameter of .454″, while post war models usually run .451″. It is wise to slug your barrel and size cast bullets to as near the exact diameter as possible.

In order to adhere to the maximum overall length listed, the seating depth of some cast bullets must be watched closely. Bullet #454190 should be seated to crimp on the ogive. Bullet #454424 should be seated to crimp on the forward edge of the first driving band.

If a crimp is desired on half-jacketed bullets, it should be placed at the junction of the jacket and lead nose.

250 Grain Half-Jacket

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Unique	8.0	813	9.0	901
SR 4756	10.0	600	11.5	815
IMR 4227	19.0	823	22.0	1017

Accuracy Load:
Unique Powder, 8.0 Grains, 813 F.P.S.

175 Grain Cast

BULLET #45468 (#2 ALLOY)
(Hollow Base)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	526	8.0	1058
Red Dot	5.5	514	8.0	892
Unique	8.0	785	12.0	1192
SR 7625	7.0	565	9.5	728
SR 4756	10.5	635	13.0	878
IMR 4227	22.0	952	26.0	1139

235 Grain Cast

BULLET #454309 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	575	6.8	905
Red Dot	5.5	678	7.0	830
Unique	8.0	850	10.7	1095
SR 7625	7.0	593	9.1	827
SR 4756	9.0	634	12.8	1008
IMR 4227	20.0	994	24.0	1097

Accuracy Load:
Unique Powder, 8.0 Grains, 850 F.P.S.

250 Grain Cast

BULLET #454190 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	545	6.6	855
Red Dot	5.5	675	6.8	810
Unique	7.5	790	10.3	1028
SR 7625	6.0	487	8.8	786
SR 4756	9.0	630	12.5	951
IMR 4227	19.0	846	23.0	1063

Accuracy Load:
Unique Powder, 8.0 Grains, 830 F.P.S.

Factory Duplication Load:
Unique Powder, 7.5 Grains, 790 F.P.S.

255 Grain Cast

BULLET #454424 (#2 ALLOY)

Powder	Sug. Starting Grains	Velocity F.P.S.	Max. Grains	Velocity F.P.S.
Bullseye	4.0	545	6.3	815
Red Dot	5.5	652	6.5	779
Unique	8.0	847	10.0	1011
SR 7625	6.0	482	8.5	796
SR 4756	9.0	630	11.5	901
IMR 4227	18.0	780	22.0	1000

NOTE — Loads shown in colored panels are maximum. These loads may be dangerous in your pistol, read preamble before using.

*Designates a compressed powder charge.

Lyman

GUN SIGHT CORPORATION

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Dear Fellow Shooter:

No effort has been spared in making, this #44th Edition of the Lyman Handbook, the most useful reloading guide ever published.

All in all, over 60,000 rounds of ammunition were loaded and fired in more than 150 firearms during two years of testing. All these loads were very closely checked for velocity and pressures. Accuracy results with each load was carefully noted. Those loads which were finally selected as 'accuracy loads' were the very best developed in our test guns.

However, we are fully aware of the endless number of possible combinations that will, no doubt, give excellent accuracy. Here is where you can be of assistance to your fellow shooters.

Lyman would like to hear about your proven accuracy loads; provided of course, they fall between our suggested starting loads and our maximum listings. We will make every attempt to include these loads in future handbooks. Complete details of your load would be required, including pertinent information such as, brand name of components, number of rounds fired, and firearms used.

Your general comments on this handbook will also enable us to continue to fill your needs and desires in future handbooks.

Good Shooting

THE LYMAN GUN SIGHT CORPORATION

Edward A. Matunas

Edward A. Matunas
Ballistic & Reloading Technician

Loading Shotshells

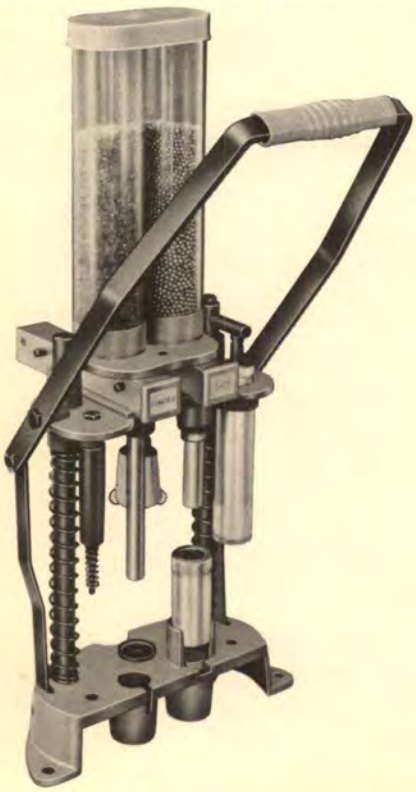
This chapter is devoted to the basic mechanics of reloading shotshells. We urge the beginner to read it carefully and to also read the preamble to his data section before attempting to reload. The preamble, located at the beginning of each data section is intended to help you interpret this data and insure its correct use.

CHOOSING YOUR LOADER

Selecting a reloading machine can be pretty confusing to the average beginner because these units are available in such a wide variety of designs and at a wide range in prices. Starting as low as $12.50 for a hand type tool, and going as high as $300.00 for a super progressive, the novice is offered a maze of features for which he is expected to "pay his money and take his choice". Unfortunately, at this stage of the game, the beginner is not sure of his requirements and he has difficulty in interpreting the advertised features of each machine.

To help simplify this problem let us analyze for a moment just what it is that you pay for in a shotshell machine. Obviously, all machines are identical in at least one manner: **They all load shotshells.** How well, how fast and how easy they will do this is what you are actually buying. Unlike a metallic cartridge reloading press, most shotshell machines are a package deal. That is, they come complete with a set of reloading dies, a powder measure and a shot measure. Consequently, the starting price of the average good shotshell machine may appear high in comparison to the starting price of the rifle cartridge press. If you consider the additional equipment that is included with the shotshell machine, you are not actually paying more.

The beginner needs a reloader that is easy to understand and simple to operate. Many shotshell reloading machines come completely assembled and adjusted. This is a worthwhile feature for getting started with the least amount of fuss.



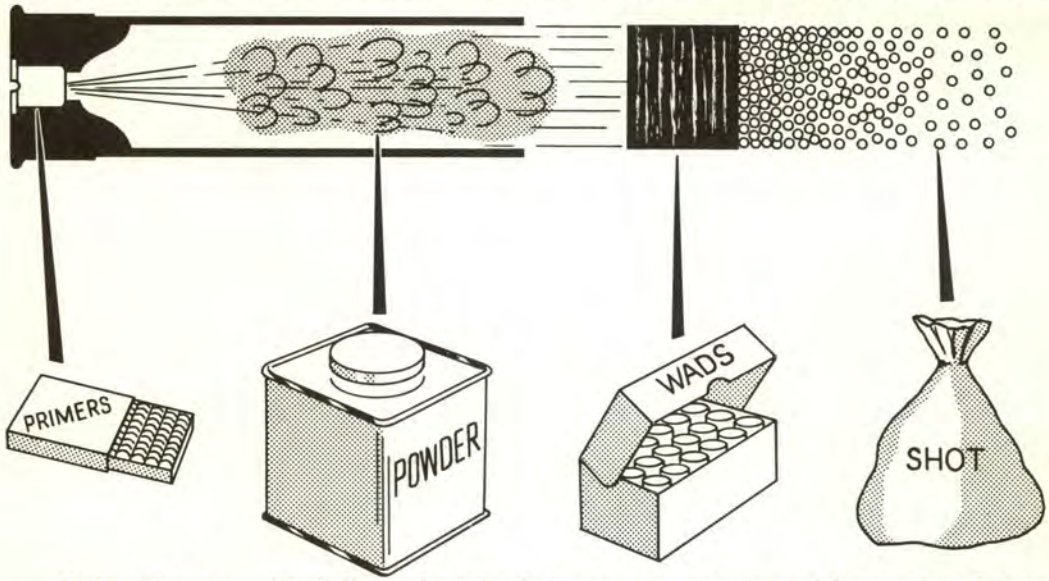
The main factor that causes the difference in prices between shotshell reloading machines is **reloading speed**. Moderately priced loaders are completely manual operated. A single shotshell case is moved by hand through a sequence of loading procedures. Although such machines are usually the simplest to use, they do have the slowest rate of production.

The progressive reloader is much faster, but it is also more expensive and slightly more complicated. It processes a number of cases at one time — turning them out at a very respectable hourly rate. As the operator must pull the press handle and feed cartridges into the machine, some progressive units are partially manual. Others are available that provide various stages of automatic operation.

For the instructional text and illustrations in this chapter, we have selected the Lyman Easy Shotshell Loader (production rate—240 shells per hour).

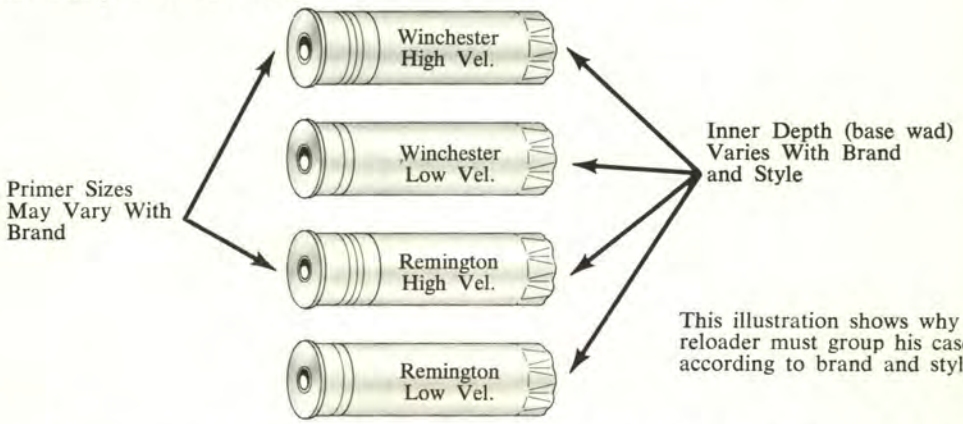
BUYING THE PROPER COMPONENTS

When you fire a shotshell four components, or parts, of the original cartridge are used up. They are: 1. The PRIMER. 2. The POWDER. 3. The WADS. 4. The SHOT.



Before the same shotshell can be reloaded, new components must be purchased to replace those expended in firing.

The key to selecting proper components lies in the fired shotshell casing. The inner dimensions of the cases vary with brand and style of shell. If you are to reload a shotshell successfully, you must be able to identify your casing and pick a loading for that particular case. You cannot mix cases of various brands and styles and hope to load them successfully with the same primers and wads.



This illustration shows why a reloader must group his cases according to brand and style.

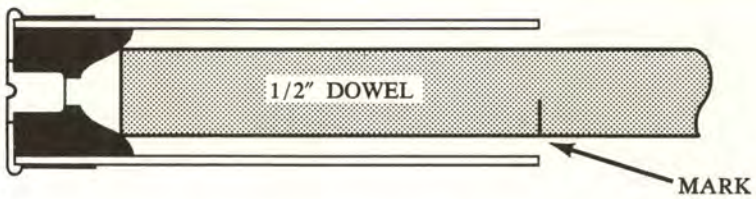
To choose your components turn to the Data Page in the Handbook which lists loads for your gauge. From the variety of loads shown, pick the one that fits your requirements. For example, if you wish a 12 gauge 2-3/4″ field load, choose loads in this bracket that list your casing. The Data Page will also give the correct primer size and a suggested shot size for your casing.

GATHERING AND PREPARING YOUR CASES

Most hand-loaders depend on new factory loaded ammo as a source for their cases. After the new cartridges have been fired, the casings are saved and put carefully away for future reloading. They should be stored in a moderately warm, clean area that is as free from dampness as possible. A moisture proof box is the best place to store both plastic and paper cases. This keeps them clean and dry.

Form the habit of inspecting your cases carefully before each reloading. It is the mark of a professional reloader and the only way to produce quality handloads for your scatter gun.

Sort the cases by brand and style — this is a must! Only cases of the same brand and style can be loaded as a group. Check each case for defects in the inner base wad as explained in the following illustration.



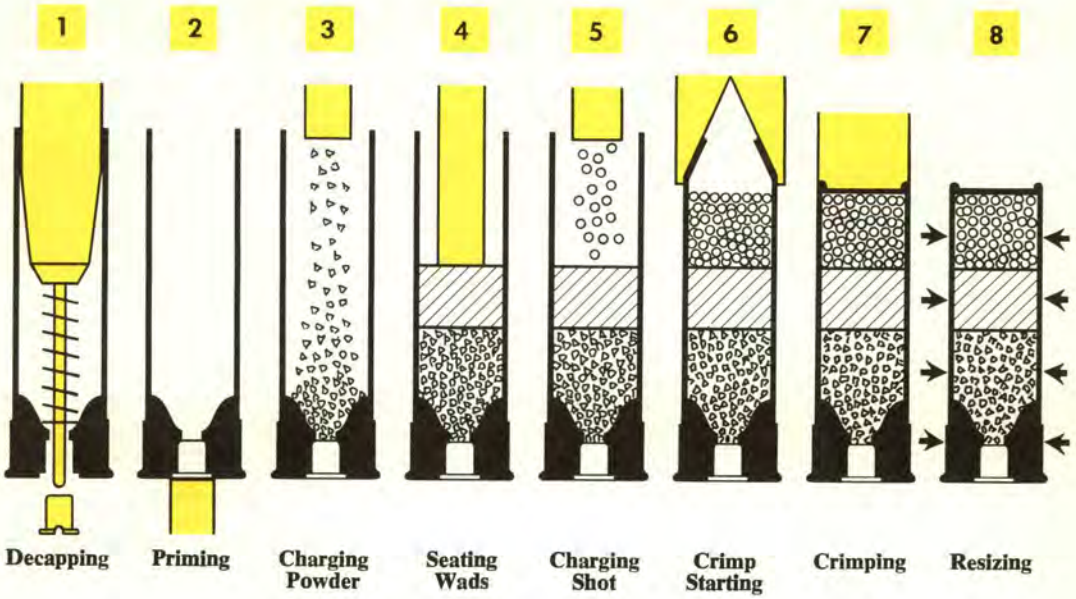
The dark area in the illustration is the **inner base wad**. Portions of the wad are sometimes blown out or destroyed, when the cartridge is fired. Good reloading requires that the inner base wad be intact. To check for defects in the inner base wad, make a simple depth gauge from a piece of ½" dowel. Insert the dowel in a new or once fired case and mark it at the case mouth. If your cases are all of the same brand and style (as they should be), this gauge can be used to check all the cases of the lot. Discard any that vary in depth.

Assuming that the cases are of one group and that they have passed the inner base wad test, let's continue with the inspection:

1. Discard any cases that are bent or badly deformed.
2. Check to see if the crimp that holds the plastic tube (or paper) to the metal has loosened. Discard the loose ones.
3. Discard any cases that show cracks, holes or tears.

MAKING SHOTSHELLS

Putting a shotshell together is really a series of eight very basic mechanical operations. When you view the operations collectively, as shown in the illustration, they may appear somewhat complicated and tedious to enact. Actually, they are not difficult. The eight operations are performed in a series of five simple steps that are really quite easy and, in fact, rather fun.



Let's first understand each of these operations and find out why they are necessary to reload a shotshell:

1. DECAPPING

This operation is simply knocking out the old or fired primer.

2. PRIMING

This operation is merely inserting a new primer into the case.

3. CHARGING POWDER

On most present day shotshell machines, the powder measure is an integral part of the tool and is designed to drop a fixed charge. A powder bushing, which is inserted in the measure, controls the amount of powder it throws.

4. SEATING WADS

Wadding in a shotshell has three functions: (1) It compresses and holds the powder so it will burn properly. (2) It acts as a gas seal. (3) It cushions and protects the shot charge.

In past years various wadding materials such as felt, cork and paper were extensively used. Today, plastic materials have all but replaced the old type wads (see "Shotshell Wads" chapter page 185).

5. CHARGING SHOT

As with the powder charging step, most present day machines have a built-in shot measure. The measure is designed to drop a fixed charge of shot into the case. A shot bushing which is inserted into the measure, controls the amount of shot it throws.

6. CRIMP STARTING

The plastic used in today's shotshells is a tough material. It will not bend into a crimp form as readily as the paper cases. Therefore, it is necessary to complete the crimp in two stages. This, the first stage, is called crimp starting. Crimp starting consists of the use of a forming die which starts the folds, or pleats, in the mouth of the case.

7. CRIMPING

This is the second and final stage of crimping. A forming die closes the case into the familiar pie shaped design. This type of closure is called a fold crimp.

8. RESIZING

When a shotshell is fired the walls of the case swell to the chamber size of the gun. These same walls will bulge even more as the shotshell case is subjected to the various reloading operations of wadding, crimping, etc. To correct this condition and to make sure that the finished round will chamber freely, resizing is necessary.

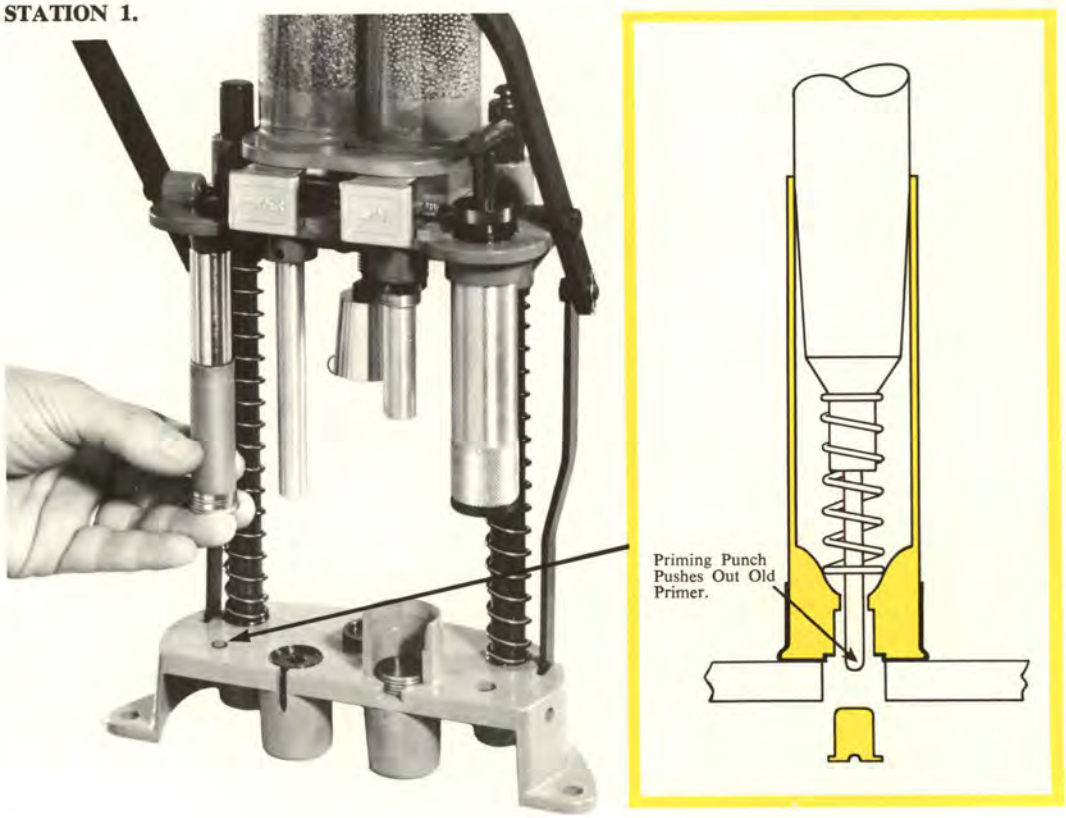
As you read through this chapter, you will note that two reloading operations are sometimes completed in but a single step.

LET'S GET STARTED

The shotshell reloader pictured on the following pages contain five loading stations. The text accompanying each illustration explains the operations that are required at each station.

Until you have become familiar with the functions of each station, do not try to obtain speed. Loading speed will come naturally as you develop a rhythm in your movements. Perform the operations slowly and strive always for a consistent uniformity of motion. Now, if all your components have been checked out, let's fill up the powder and shot hoppers and commence loading.

STATION 1.



STATION 1. (Decapping)

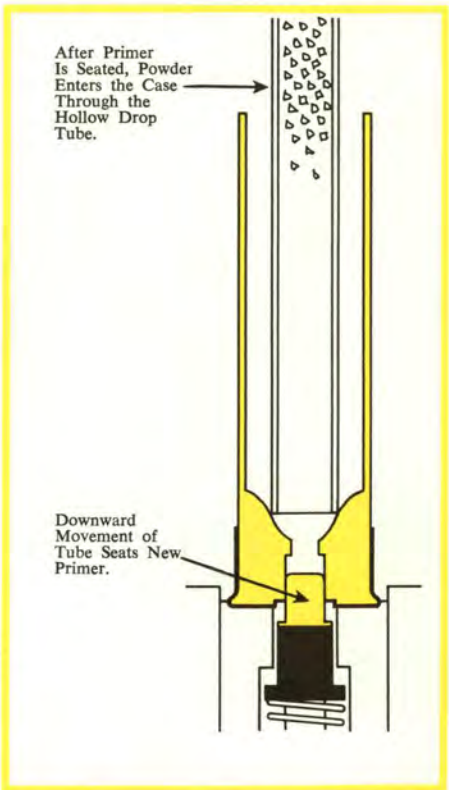
Select a fired shotshell casing and slip it up over the decapping punch as shown in the illustration. Hold the casing in this position with your hand as you pull the press handle all the way down. The punch will carry the casing down with it and expel the spent primer from under the press. Raise the handle and remove the casing. It is ready to be primed and charged.

STATION 2. (Priming and Charging Powder)

A new primer is placed (flange down) into the priming base as shown in the illustration. Place the head of the shotshell in the circular recess over the primer. Pull down lightly on the press handle and you will note that the powder drop tube will enter the case and force the case down over the primer. The downward pressure on the handle should be only hard enough to seat the primer — no more. Now, hold down on the handle while you operate the powder slide. Pull the slide out and push it in smoothly with a single stroke in each direction.

Raise the press handle and remove your shell. It has been primed and charged with powder.

STATION 2.



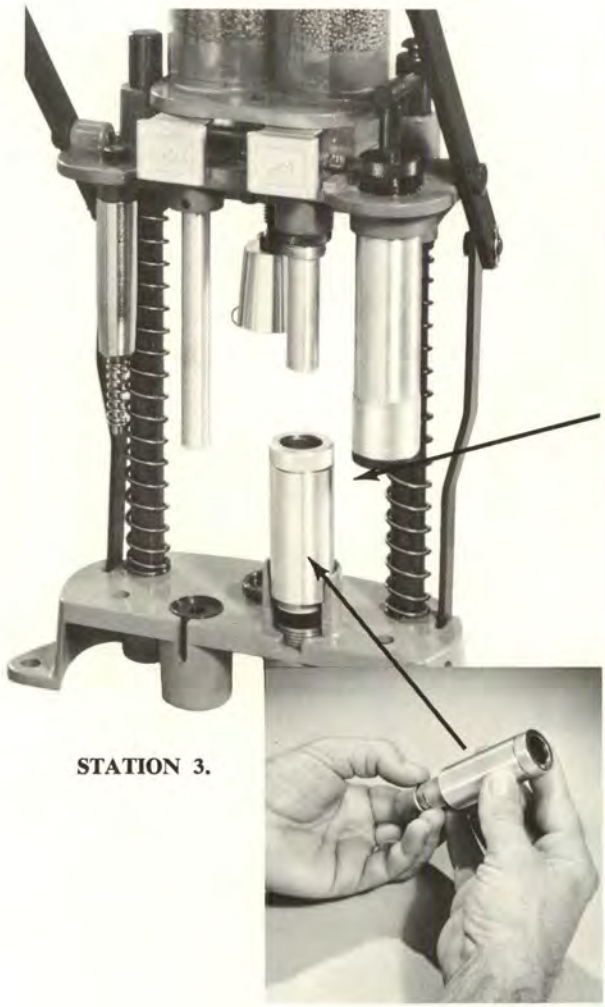
Seat primers so that the flange of the battery cup is firm against the case base. If the primer is loose in the pocket, discard the case.

STATION 3. (Wadding and Charging Shot)

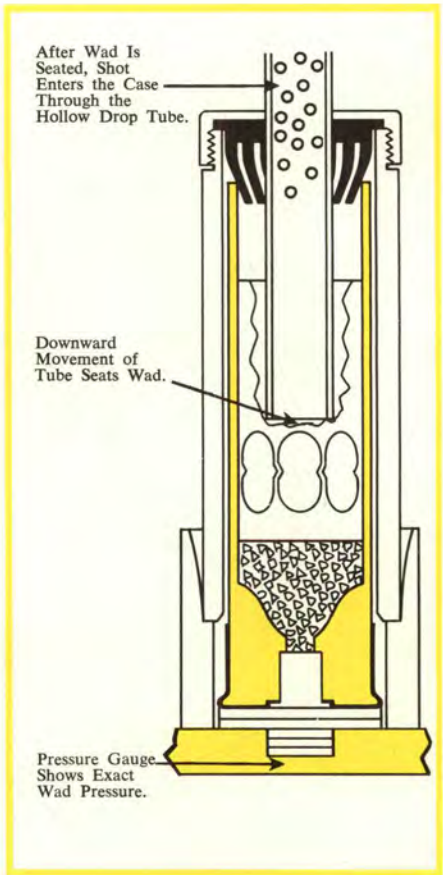
Once the case has been primed and charged with powder it is ready to advance to the third station of the press. Here is where we insert the wads and put in the shot charge. So that the wads will enter the case easily, the case is first inserted into a wad chamber (see illustration). The wad chamber and case are then set into the base collar over the pressure gauge. Wads are started into the chamber by hand.

Pull down on the press handle and the wad will seat firmly against the powder. The pressure gauge will tell you exactly how much pressure you are applying. Now, hold the handle down and operate the shot slide. Pull the slide out and push it in smoothly with a single stroke in each direction.

Raise the handle carefully and remove your case from the wad chamber. It is now ready for crimping.



STATION 3.

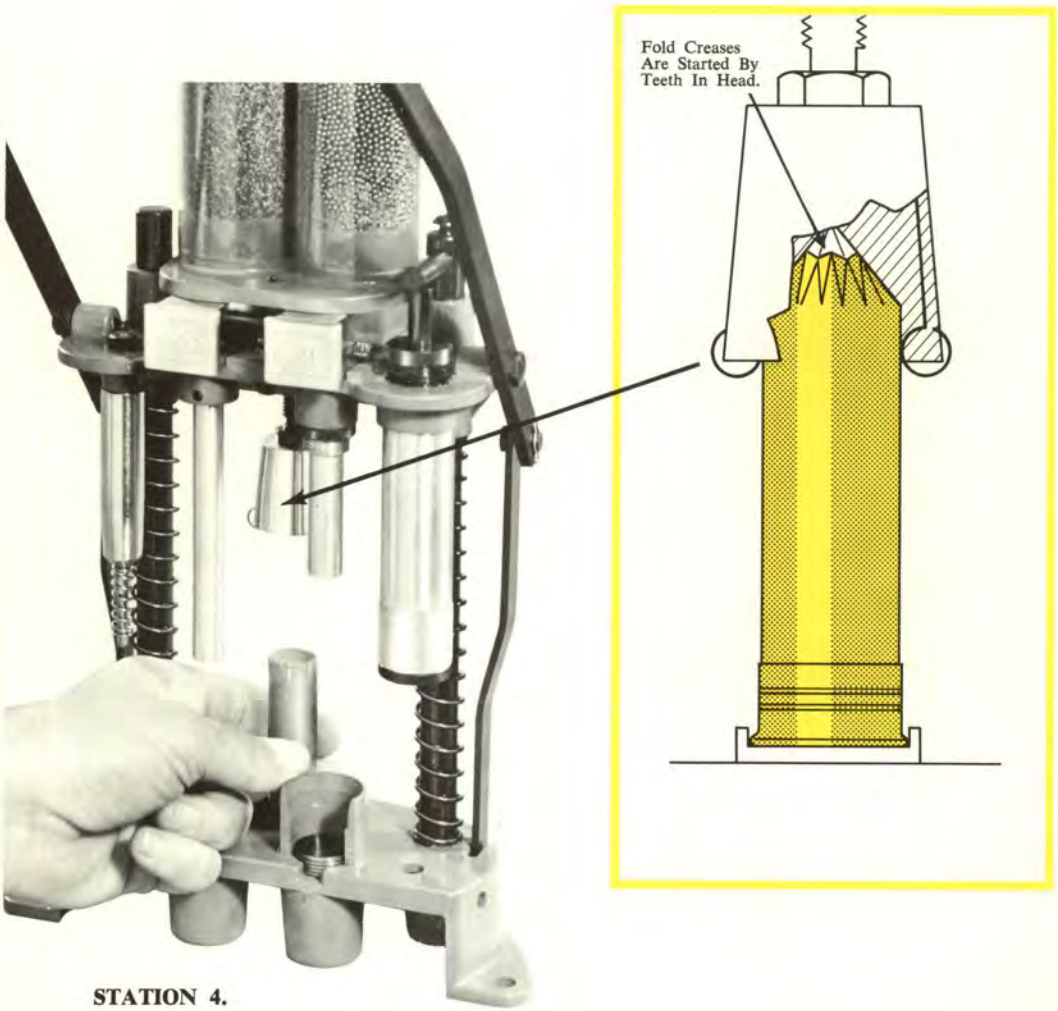


STATION 4. (Starting the Crimp)

The crimp starter is set to the back of the loader as pictured in the illustration. Many plastic cases (and new paper cases) require the use of the crimp starter.

Depending on brand and style, cases vary in the number of folds or pleats which are used to close the crimp. Some cases require eight folds, others six. Be sure that your crimp starter is equipped with the appropriate head for the case you are loading.

To use the crimp starter simply place your charged case in the alignment base under the starter and pull down the handle. The self-aligning arm will pivot the starter head so that it meshes to the existing fold creases in the case mouth (see illustration).

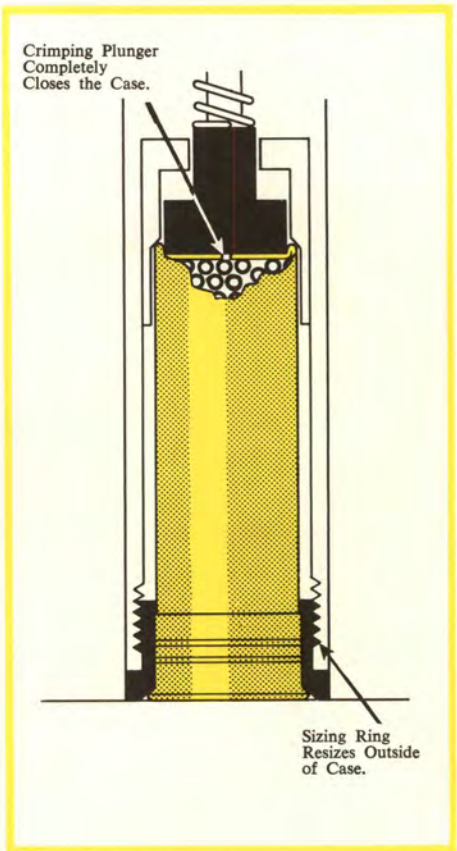


STATION 4.

STATION 5. (Crimping and Sizing)

This is the final operation in loading a shotshell. Here we completely close the mouth with a good firm crimp and resize the case. Slip your shotshell up into the crimping and sizing die as shown in the illustration. Pull the press handle all the way down. Allow the handle to raise slowly. Now, firmly force the press handle up so that the ejector rod (in the top of the die) contacts the ejector stop. This action will automatically free your finished shell from the die.

STATION 5.



SHOTSHELL DATA & PREAMBLE

The loading data contained in this shotshell section of the 44th Handbook supersedes all previous reloading data published in preceding issues of the Lyman Handbook. The data listed in this section has been tested by our technicians and found to be safe when loaded with our components and fired in our test guns under our controlled conditions. Since the Lyman Gun Sight Corporation has no control over the actual loading, choice or condition of the firearms and components used, no responsibility for any use of this data is assumed.

The velocities printed in this section were recorded at a distance of 4½ feet from the muzzle of the test gun. The following is a further explanation of the loads listed.

COMPONENTS — The reader is cautioned against changing, or altering, the listed components. Shotshell ballistics and pressures can change drastically if cases, primers, wads, etc., are altered or substituted for those listed. For further explanation see "Shotshell Ballistics and Tips" following this data section.

WADS — Wads are listed in their loading order. For example, the first wad listed goes on top of the powder charge and the others follow it in their printed order. For further information on the various types of wads and their source of manufacture see the "Shotshell Wads" chapter which follows this data section.

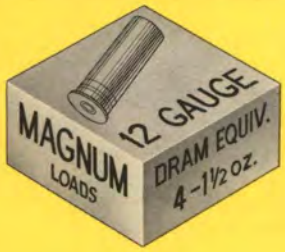
WAD PRESSURE — For the majority of the shotshell loads listed in this Handbook, you will require almost no wad pressure. Use only enough pressure to seat the wads firmly on the powder. In some instances, however, due to variations in shot, or powder density, it may be necessary to increase the wad pressure. If the components will not fit into the case, feel free to add wad pressure (anywhere from one to one hundred pounds) if required. This compresses the wads and leaves room for the rest of the components and crimp.

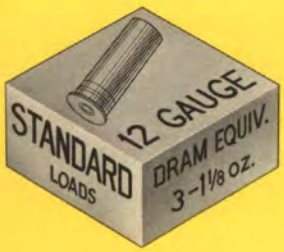
GAUGES AND SHELL LENGTHS — The following gauges and shell lengths are listed in this data.

10 Gauge — 3-1/2″ and 2-7/8″ lengths
12 Gauge — 3″ and 2-3/4″ lengths
16 Gauge — 2-3/4″ length
20 Gauge — 3″ and 2-3/4″ lengths
28 Gauge — 2-3/4″ length
410 Gauge — 3″ and 2-1/2″ lengths

For Information On Selecting A Load, See The Reverse Side Of This Divider . . .

When originally purchased, your shotshells where marked very similar to those pictured below.

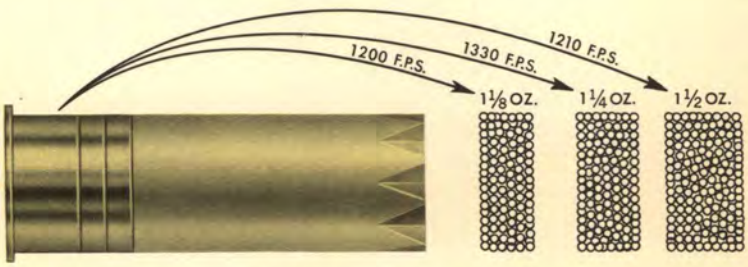




The shotshells were marked with a "Dram Equivalent" and the shot charge weight in ounces. This "Dram Equivalent" does not mean that these shells actually contained this many drams of smokeless powder. They did not and it would be extremely dangerous to reload these shells assuming that this represented the actual weight of the original powder charge.

"Dram Equivalent" is really a rather obsolete term which is used to express the approximate velocity of a shot charge. The term itself is far from exact, but it draws a comparison between the velocity of a shot charge driven by an unknown amount of smokeless powder to that of a similar charge driven by a given number of drams of black powder.

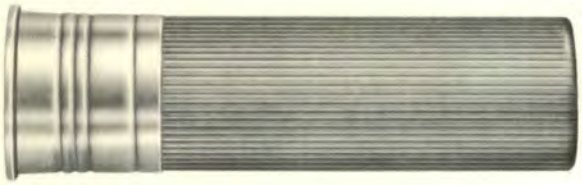
To reload shotshells intelligently, we must think in terms of actual velocity and compare this velocity to the weight of the shot charge.



Many factory loads which are marked as Magnum, while they deliver a heavier shot charge to the target, may actually have a lower velocity than another load which is marked as a normal high velocity load.

The shotshell data in this Handbook is listed by actual (chronographed) velocity not dram equivalent. Loads are shown in order of: GAUGE, SHELL LENGTH, SHOT CHARGE, WEIGHT and VELOCITY. To determine the load which best suits your purpose, first locate your gauge and appropriate shell length. Then select the shot charge weight that you wish to use. By comparing the loads listed you can then choose the velocity level that is required for your shooting.

Note — It should not be assumed that a low velocity necessarily indicates a low chamber pressure. For more information on shotshell reloading see "Shotshell Ballistics and Tips" which follows this data section.



10 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

With the components available to the reloader it is very difficult to obtain satisfactory results from reloads in this gauge.

After extensive research only a very few loads consistently delivered the uniform ballistics required to meet the exacting standards which we had set for data in this Handbook.

Test Gun — Zabala — 32" Barrel

10 GAUGE 3½" FIELD LOADS - 2 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Alcan AL-8 54.0 grs.	Alcan G57F	One Alcan PGS Wad Two Alcan 3/8" Feltan-Bluestreak	1250 F.P.S.
Alcan AL-7 44.0 grs.	Alcan G57F	One Alcan PGS Wad Two Alcan 3/8" Feltan-Bluestreak One Alcan 1/4" Feltan-Bluestreak	1160 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — ROLLED

10 GAUGE 2⅞" FIELD LOADS - 1⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 43.0 grs.	Remington 57★	One Remington .135" Card One Remington 1/4" Felt	1190 F.P.S.
SR 4756 44.0 grs.	Remington 57★	One Remington .135" Card One Remington 1/4" Felt	1225 F.P.S.
SR 4756 45.0 grs.	Remington 57★	One Remington .135" Card One Remington 1/4" Felt	1260 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — ROLLED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

This section includes data for all the 2-3/4" and 3" shells which lended themselves readily to reloading.

The Remington/Peters plastic target case gave the best over-all reloading results. This is based on the total number of reloads we could obtain from each case and the number of varying loads which could be put into the case. This case is readily identifiable by its plastic inner base wad and the grooves which appear on the circumference of the brass portion of the case. For complete case description see chapter titled "Shot Shell Ballistics and Tips" which follows this data section.

In Winchester and Western cases we suggest that the over powder wads for all loads be inserted individually and visually checked for proper seating.

The data for the 3" cases with the heavier shot charges is somewhat limited due to the lack of suitable reloading components.

Test Gun 3" Shells — Mossberg 500 — 30" Barrel

Test Gun 2-3/4" Shells — Mossberg 500 — 30" Barrel

12 GAUGE 3" FIELD LOADS - 1⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 32.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Mold Tite	1020 F.P.S.
SR 4756 35.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Mold Tite	1075 F.P.S.
SR 4756 32.0 grs.	Remington 57★	One Remington Power Piston #W23676	1115 F.P.S.
SR 4756 32.0 grs.	Remington 57★	One Remington Power Piston #W23618	1125 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 3" FIELD LOADS - 1⅝ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 37.0 grs.	Remington 57✱	One Remington H Wad One Remington 1/2" Mold Tite	1235 F.P.S.
SR 4756 38.0 grs.	Remington 57✱	One Remington H Wad One Remington 1/2" Mold Tite	1265 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 3" FIELD LOADS - 1⅜ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 33.0 grs.	Remington 57✱	One Remington H Wad One Remington 5/16" Felt One Remington 1/4" Felt	1175 F.P.S.
SR 4756 34.5 grs.	Remington 57✱	One Remington H Wad One Remington 5/16" Felt One Remington 1/4" Felt	1215 F.P.S.
SR 4756 36.0 grs.	Remington 57✱	One Remington H Wad One Remington 5/16" Felt One Remington 1/4" Felt	1250 F.P.S.
SR 4756 37.5 grs.	Remington 57✱	One Remington H Wad Two Remington 1/4" Felt	1305 F.P.S.
SR 4756 39.0 grs.	Remington 57✱	One Remington H Wad Two Remington 1/4" Felt	1355 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE — 2, 4
- DUCKS — 4, 5, 6
- TURKEY — 2, 4
- FOX — 2, 4
- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

12 GAUGE 2¾" FIELD LOADS - 1½ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 30.0 grs.	Remington 57✱	One Remington H Wad One Remington 1/4" Mold Tite	1115 F.P.S.
SR 4756 32.0 grs.	Remington 57✱	One Remington H Wad One Remington 1/4" Mold Tite	1175 F.P.S.
SR 4756 32.0 grs.	Remington 57✱	One Remington H Wad One Remington 3/8" Mold Tite	1195 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1½ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 33.5 grs.	Remington 57★	One Remington H Wad One Remington 1/4" Mold Tite	1205 F.P.S.
SR 4756 34.5 grs.	Remington 57★	One Remington H Wad One Remington 1/4" Mold Tite	1230 F.P.S.
SR 7625 27.0 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Mold Tite	1145 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1½ oz. SHOT

POWDER	PRIMERS	WAD*	VELOCITY
SR 4756 30.0 grs.	Remington 97★	One Remington .135" Card One Remington 3/16" Felt	1045 F.P.S.
SR 4756 31.0 grs.	Remington 97★	One Remington H Wad One Remington 1/8" Felt	1160 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Remington H Wad One Remington 1/4" Mold Tite	1135 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1½ oz. SHOT

POWDER	PRIMERS	WAD*	VELOCITY
SR 4756 32.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber	1170 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber	1100 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including the AA target cases.

TYPE OF CRIMP — FOLDED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 21.5 grs.	Remington 69	One Remington Power Piston #W23694	1225 F.P.S.
PB 24.0 grs.	Remington 57★	One Remington Power Piston #W23694	1210 F.P.S.
PB 24.0 grs.	Remington 57★	One Remington Post Wad #W23618	1210 F.P.S.
PB 25.0 grs.	Remington 57★	One Remington H Wad Two Remington 1/4" Mold Tite	1215 F.P.S.
PB 30.5 grs.	Remington 69	One Remington Power Piston #W23676	1335 F.P.S.
PB 30.5 grs.	Remington 69	One Remington H Wad One Remington 3/8" Mold Tite	1335 F.P.S.
SR 7625 27.5 grs.	Remington 69	One Remington Power Piston #W23694	1225 F.P.S.
SR 7625 27.0 grs.	Remington 69	One Remington Post Wad #W23618	1220 F.P.S.
SR 7625 28.0 grs.	Remington 69	One Remington H Wad Two Remington 1/4" Mold Tite	1235 F.P.S.
SR 7625 30.5 grs.	Remington 69	One Remington Power Piston #W23676	1320 F.P.S.
SR 7625 31.0 grs.	Remington 69	One Remington H Wad One Remington 1/2" Mold Tite	1320 F.P.S.
SR 7625 29.5 grs.	Alcan G57F	One Remington H Wad One Remington 1/2" Mold Tite	1305 F.P.S.
SR 7625 30.0 grs.	Alcan G57F	One Remington H Wad One Remington 1/2" Mold Tite	1315 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 35.0 grs.	Remington 57★	One Alcan Air-Wedge One Remington 1/4" Felt	1300 F.P.S.
SR 4756 37.0 grs.	Remington 57★	One Alcan Air-Wedge One Remington 3/16" Felt	1360 F.P.S.
SR 4756 39.0 grs.	Remington 57★	One Alcan Air-Wedge One Remington 3/16" Felt	1410 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 25.0 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Mold Tite	1230 F.P.S.
PB 23.5 grs.	Remington 97★	One Remington H Wad One Remington 1/4" Mold Tite One Alcan Kwik-Sert	1220 F.P.S.
SR 7625 24.0 grs.	Federal 209	One Remington Power Piston #W23676	1220 F.P.S.
SR 7625 24.0 grs.	Federal 209	One Remington H Wad One Remington 3/8" Mold Tite One Alcan Kwik-Sert	1225 F.P.S.
SR 7625 23.5 grs.	Winchester 209	One Alcan Flite-Max #1	1220 F.P.S.
SR 7625 26.0 grs.	Winchester 209	One Remington .135" Card One Remington 7/16" Felt	1160 F.P.S.
SR 7625 27.5 grs.	Winchester 209	One Remington .135" Card One Remington 3/8" Felt	1180 F.P.S.
SR 7625 25.5 grs.	Winchester 209	One Remington H Wad One Remington 3/8" Mold Tite	1225 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 27.0 grs.	Winchester 209	One Remington H Wad One Remington 3/8" Mold Tite	1230 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Remington Power Piston #W23676	1235 F.P.S.
SR 7625 26.5 grs.	Alcan WW209F	One Remington H Wad One Remington 1/4" Mold Tite One Alcan Kwik-Sert	1285 F.P.S.
SR 4756 30.0 grs.	Remington 97★	One Remington H Wad One Remington .135" Card One Remington 1/8" Felt	1140 F.P.S.
SR 4756 35.0 grs.	Remington 97★	One Remington H Wad One Remington 3/16" Felt	1295 F.P.S.
SR 4756 35.5 grs.	Remington 97★	One Remington H Wad One Remington 3/16" Felt	1315 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 23.5 grs.	Winchester 209	One Remington Power Piston #W23676	1220 F.P.S.
SR 7625 24.0 grs.	Winchester 209	One Winchester AA Wad #WAA12R	1210 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Remington Power Piston #W23694	1215 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester ½" Molded Fiber One Alcan Kwik-Sert	1215 F.P.S.
SR 7625 26.5 grs.	Winchester 209	One Remington Power Piston #W23694	1265 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including the AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 26.5 grs.	Winchester 209	One Winchester Plastic Cup One Winchester ⅜" Molded Fiber One Winchester ¼" Molded Fiber	1230 F.P.S.
SR 4756 33.5 grs.	Federal 209	One Winchester Plastic Cup One Winchester ½" Molded Fiber	1275 F.P.S.
SR 4756 34.5 grs.	Federal 209	One Winchester Plastic Cup One Winchester ½" Molded Fiber	1310 F.P.S.
SR 4756 35.5 grs.	Federal 209	One Winchester Plastic Cup One Winchester ½" Molded Fiber	1335 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including the AA target cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 21.0 grs.	Remington 97★	One Federal Champion Pellet Protector 7/8" Size	1220 F.P.S.
PB 25.5 grs.	Federal 209	One Alcan Flite-Max #4	1225 F.P.S.
PB 26.5 grs.	Federal 209	One Federal .135" Card One Federal 1/2" Fiber One Alcan Kwik-Sert	1220 F.P.S.
PB 27.0 grs.	Remington 97★	One Winchester Plastic Cup One Winchester ½" Molded Fiber One Alcan Kwik-Sert	1270 F.P.S.
PB 27.0 grs.	Remington 97★	One Remington Power Piston #W23694	1270 F.P.S.
SR 7625 27.0 grs.	Federal 209	One Alcan Flite-Max #4	1220 F.P.S.
SR 7625 27.5 grs.	Federal 209	One Federal .135" Card One Federal 1/2" Fiber One Alcan Kwik-Sert	1215 F.P.S.

USE WITH CASES LISTED BELOW

Federal Monark and Champion paper cases.

Federal plastic Monark cases.

Federal High Power paper cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 28.0 grs.	Federal 209	One Alcan Flite-Max #4	1265 F.P.S.
SR 7625 29.0 grs.	Federal 209	One Federal .135" Card One Federal 1/2" Fiber One Alcan Kwik-Sert	1275 F.P.S.
SR 7625 31.0 grs.	Federal 209	One Federal .135" Card One Federal 1/2" Fiber One Alcan Kwik-Sert	1320 F.P.S.

USE WITH CASES LISTED BELOW

Federal Monark and Champion paper cases.
Federal plastic Monark cases.
Federal High Power paper cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 21.0 grs.	Remington 97★	One Remington Power Piston #W23694	1215 F.P.S.
PB 25.0 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #4	1225 F.P.S.
PB 25.5 grs.	Alcan WW209F	One Alcan P.G.S. Wad One Alcan 1/2" Feltan-Bluestreak One Alcan Kwik-Sert	1215 F.P.S.
PB 26.0 grs.	Alcan 220 Max-Fire	One Remington Power Piston #W23694	1265 F.P.S.
PB 26.5 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Mold Tite One Alcan Kwik-Sert	1265 F.P.S.
SR 7625 26.5 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #4	1225 F.P.S.
SR 7625 26.5 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 5/16" Feltan-Bluestreak One Alcan Kwik-Sert	1230 F.P.S.
SR 7625 27.5 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #4	1270 F.P.S.

USE WITH CASES LISTED BELOW

Alcan Trapmax and Skeetmax paper target L-4 cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 27.5 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 5/16" Feltan-Bluestreak One Alcan Kwik-Sert	1265 F.P.S.
SR 7625 30.0 grs.	Alcan WW209F	One Alcan Flite-Max #4	1330 F.P.S.
SR 7625 30.5 grs.	Alcan WW209F	One Alcan P.G.S. Wad One Alcan 1/2" Feltan-Bluestreak One Alcan Kwik-Sert	1335 F.P.S.

USE WITH CASES LISTED BELOW

Alcan Trapmax and Skeetmax paper target L-4 cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 20.5 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1240 F.P.S.
PB 24.5 grs.	Remington 57★	One Remington Power Piston #W23694	1255 F.P.S.
PB 24.5 grs.	Remington 57★	One Remington Post Wad #W23618	1255 F.P.S.
PB 25.0 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Mold Tite One Remington 1/4" Mold Tite	1260 F.P.S.
PB 28.0 grs.	Remington 57★	One Remington Power Piston #W23694	1360 F.P.S.
PB 28.0 grs.	Remington 57★	One Remington Post Wad #W23618	1370 F.P.S.
PB 30.5 grs.	Remington 69	One Remington H Wad Two Remington 1/4" Mold Tite	1370 F.P.S.
SR 7625 28.5 grs.	Remington 69	One Remington Power Piston #W23694	1260 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic case, both high and low brass, with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 28.0 grs.	Remington 69	One Remington Post Wad #W23618	1265 F.P.S.
SR 7625 28.0 grs.	Remington 69	One Remington H Wad Two Remington 3/8" Mold Tite	1260 F.P.S.
SR 7625 31.5 grs.	Remington 69	One Remington Power Piston #W23694	1360 F.P.S.
SR 7625 31.0 grs.	Remington 69	One Remington Post Wad #W23618	1370 F.P.S.
SR 7625 31.5 grs.	Remington 69	One Remington H Wad One Remington 3/8" Mold Tite One Remington 1/4" Mold Tite	1370 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic case, both high and low brass, with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WAD*	VELOCITY
Hi-Skor 700X 19.0 grs.	Remington 97★	One Remington Power Piston #W23694	1245 F.P.S.
Hi-Skor 700X 19.0 grs.	Remington 97★	One Remington Post Wad #W23618	1235 F.P.S.
Hi-Skor 700X 20.5 grs.	Remington 97★	One Remington H Wad One Remington 1/2" Mold Tite	1255 F.P.S.
PB 24.0 grs.	Remington 97★	One Remington Power Piston #W23676	1255 F.P.S.
PB 24.5 grs.	Remington 97★	One Remington H Wad One Remington 1/2" Mold Tite	1255 F.P.S.
PB 25.5 grs.	Remington 97★	One Remington H Wad One Remington 1/2" Mold Tite	1290 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases, with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WAD*	VELOCITY
PB 26.5 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Mold Tite	1325 F.P.S.
PB 27.5 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Mold Tite	1360 F.P.S.
SR 7625 26.0 grs.	Winchester 209	One Remington H Wad One Remington 1/2" Mold Tite	1255 F.P.S.
SR 7625 27.0 grs.	Winchester 209	One Remington H Wad One Remington 1/2" Mold Tite	1295 F.P.S.
SR 7625 28.0 grs.	Winchester 209	One Remington H Wad One Remington 1/2" Mold Tite	1340 F.P.S.
SR 7625 29.0 grs.	Winchester 209	One Remington H Wad One Remington 1/2" Mold Tite	1370 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases, with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS*	WADS*	VELOCITY
PB 24.0 grs.	Winchester 209	One Winchester AA Wad #WAA12R	1255 F.P.S.
PB 25.5 grs.	Winchester 209	One Federal Pellet Protector 7/8" Size	1320 F.P.S.
PB 25.5 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1260 F.P.S.
PB 25.5 grs.	Remington 97★	One Federal Pellet Protector 7/8" Size	1320 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Federal Pellet Protector 7/8" Size	1215 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 26.5 grs.	Winchester 209	One Federal Pellet Protector 7/8" Size	1285 F.P.S.
SR 7625 28.0 grs.	Winchester 209	One Federal Pellet Protector 7/8" Size	1340 F.P.S.
SR 7625 29.5 grs.	Winchester 209	One Federal Pellet Protector 7/8" Size	1390 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including AA target cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.0 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1150 F.P.S.
Hi-Skor 700X 19.0 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1190 F.P.S.
PB 22.0 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1150 F.P.S.
PB 23.0 grs.	Remington 57★	One Remington Power Piston #W23694	1210 F.P.S.
PB 23.0 grs.	Remington 57★	One Remington Post Wad #W23618	1210 F.P.S.
PB 23.5 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1205 F.P.S.
SR 7625 25.0 grs.	Remington 69	One Remington H Wad Two Remington 3/8" Mold Tite	1155 F.P.S.
SR 7625 26.5 grs.	Remington 69	One Remington H Wad Two Remington 3/8" Mold Tite	1210 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases, both high and low brass, with fiber base wad and skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 17.0 grs.	Remington 97★	One Remington Power Piston #W23694	1150 F.P.S.
Hi-Skor 700X 17.0 grs.	Remington 97★	One Remington Post Wad #W23618	1150 F.P.S.
Hi-Skor 700X 18.0 grs.	Remington 97★	One Remington H Wad Two Remington 1/4" Mold Tite	1155 F.P.S.
Hi-Skor 700X 17.6 grs.	Remington 97★	One Remington Power Piston #W23694	1170 F.P.S.
Hi-Skor 700X 17.6 grs.	Alcan 220 Max-Fire	One Remington Power Piston #W23694	1210 F.P.S.
Hi-Skor 700X 17.6 grs.	Winchester 209	One Remington Power Piston #W23694	1200 F.P.S.
Hi-Skor 700X 17.6 grs.	C.C.I. 109	One Remington Power Piston #W23694	1190 F.P.S.
Hi-Skor 700X 17.6 grs.	Alcan 241	One Remington Power Piston #W23694	1180 F.P.S.
Hi-Skor 700X 18.0 grs.	Remington 97★	One Remington Power Piston #W23694	1195 F.P.S.
Hi-Skor 700X 18.0 grs.	Remington 97★	One Remington Post Wad #W23618	1190 F.P.S.
Hi-Skor 700X 19.0 grs.	Remington 97★	One Remington H Wad Two Remington 1/4" Mold Tite	1195 F.P.S.
PB 21.0 grs.	Remington 97★	One Remington Power Piston #W23676	1140 F.P.S.
PB 21.5 grs.	Remington 97★	One Remington H Wad One Remington 1/2" Mold Tite	1145 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 22.5 grs.	Remington 97★	One Remington Post Wad #W23618	1200 F.P.S.
PB 23.0 grs.	Remington 97★	One Remington H Wad One Remington 1/2" Mold Tite	1200 F.P.S.
SR 7625 22.5 grs.	Winchester 209	One Remington Power Piston #W23694	1135 F.P.S.
SR 7625 22.0 grs.	Winchester 209	One Remington Post Wad #W23618	1145 F.P.S.
SR 7625 23.0 grs.	Winchester 209	One Remington H Wad Two Remington 1/4" Mold Tite	1130 F.P.S.
SR 7625 24.0 grs.	Winchester 209	One Remington Power Piston #W23694	1200 F.P.S.
SR 7625 23.5 grs.	Winchester 209	One Remington Post Wad #W23618	1200 F.P.S.
SR 7625 24.5 grs.	Winchester 209	One Remington H Wad Two Remington 1/4" Mold Tite	1195 F.P.S.
SR 7625 21.5 grs.	Federal 209	One Remington Power Piston #W23694	1140 F.P.S.
SR 7625 21.5 grs.	Federal 209	One Remington Post Wad #W23618	1140 F.P.S.
SR 7625 22.5 grs.	Federal 209	One Remington H Wad Two Remington 1/4" Mold Tite	1150 F.P.S.
SR 7625 23.0 grs.	Federal 209	One Remington Power Piston #W23694	1200 F.P.S.
SR 7625 23.0 grs.	Federal 209	One Remington Post Wad #W23618	1205 F.P.S.
SR 7625 24.0 grs.	Federal 209	One Remington H Wad Two Remington Mold Tite	1205 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 17.0 grs.	Winchester 209	One Winchester AA Wad #WAA12	1140 F.P.S.
Hi-Skor 700X 18.5 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1145 F.P.S.
Hi-Skor 700X 18.5 grs.	Winchester 209	One Winchester AA Wad #WAA12	1210 F.P.S.
Hi-Skor 700X 20.0 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1205 F.P.S.
PB 21.5 grs.	Winchester 209	One Winchester AA Wad #WAA12	1150 F.P.S.
PB 23.0 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1155 F.P.S.
PB 22.5 grs.	Winchester 209	One Winchester AA Wad #WAA12	1190 FP..S.
PB 24.5 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1205 F.P.S.
PB 20.0 grs.	Alcan 220 Max-Fire	One Winchester AA Wad #WAA12	1150 F.P.S.
PB 21.0 grs.	Alcan 220 Max-Fire	One Winchester AA Wad #WAA12	1185 F.P.S.
SR 7625 22.5 grs.	Winchester 209	One Winchester AA Wad #WAA12	1155 F.P.S.
SR 7625 23.5 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1140 F.P.S.
SR 7625 23.5 grs.	Winchester 209	One Winchester AA Wad #WAA12	1205 F.P.S.
SR 7625 25.0 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 3/8" Molded Fiber	1205 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed case including AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.0 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1155 F.P.S.
Hi-Skor 700X 20.0 grs.	Federal 209	One Federal .135" Card Two Federal 3/8" Fiber	1155 F.P.S.
Hi-Skor 700X 19.0 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1200 F.P.S.
Hi-Skor 700X 21.5 grs.	Federal 209	One Federal .135" Card Two Federal 3/8" Fiber	1205 F.P.S.
PB 22.0 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1150 F.P.S.
PB 23.5 grs.	Federal 209	One Federal .135" Card Two Federal 3/8" Fiber	1145 F.P.S.
PB 23.5 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1200 F.P.S.
PB 25.0 grs.	Federal 209	One Federal .135" Card Two Federal 3/8" Fiber	1195 F.P.S.
PB 21.5 grs.	Alcan 220 Max-Fire	One Winchester AA Wad #WAA12	1145 F.P.S.
PB 22.5 grs.	Alcan 220 Max-Fire	One Winchester AA Wad #WAA12	1180 F.P.S.
PB 22.0 grs.	Winchester 209	One Winchester AA Wad #WAA12	1145 F.P.S.
PB 23.0 grs.	Winchester 209	One Winchester AA Wad #WAA12	1190 F.P.S.
SR 7625 24.5 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1155 F.P.S.

USE WITH CASES LISTED BELOW

All Federal Monark and Champion paper cases. Also all Federal Hi Power paper cases.
All Federal Monark plastic cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

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NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 25.5 grs.	Federal 209	One Federal .135" Card Two Federal 3/8" Fiber	1160 F.P.S.
SR 7625 25.5 grs.	Federal 209	One Federal Champion Pellet Protector 7/8" Size	1200 F.P.S.
SR 7625 27.0 grs.	Federal 209	One Federal .135" Card One Federal 3/8" Fiber One Federal 1/4" Fiber	1205 F.P.S.

USE WITH CASES LISTED BELOW

All Federal Monark and Champion paper cases. Also all Federal Hi Power paper cases.

All Federal Monark plastic cases.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.0 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1150 F.P.S.
Hi-Skor 700X 20.0 grs.	Alcan WW209F	One Alcan P.G.S. Two Alcan 3/8" Feltan-Bluestreak	1155 F.P.S.
Hi-Skor 700X 19.5 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1210 F.P.S.
Hi-Skor 700X 22.0 grs.	Alcan 220 Max-Fire	One Alcan .135" Nitro Card Two Alcan 3/8" Feltan-Bluestreak	1190 F.P.S.
PB 21.5 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1150 F.P.S.
PB 23.0 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 1/2" Feltan-Bluestreak	1145 F.P.S.
PB 23.0 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1200 F.P.S.
PB 24.5 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 1/2" Feltan-Bluestreak	1200 F.P.S.

USE WITH CASES LISTED BELOW

Alcan, Trapmax and Skeetmax paper target cases #L-4.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

12 GAUGE 2¾" TARGET - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 24.0 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1145 F.P.S.
SR 7625 25.0 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 1/2" Feltan-Bluestreak	1140 F.P.S.
SR 7625 25.0 grs.	Alcan 220 Max-Fire	One Alcan Flite-Max #5	1200 F.P.S.
SR 7625 26.5 grs.	Alcan 220 Max-Fire	One Alcan Air-Wedge One Alcan 1/2" Feltan-Bluestreak	1205 F.P.S.

USE WITH CASES LISTED BELOW

Alcan, Trapmax and Skeetmax paper target cases #L-4.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.0 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington 3/8" Mold Tite	1165 F.P.S.
Hi-Skor 700X 19.0 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington 3/8" Mold Tite	1225 F.P.S.
Hi-Skor 700X 20.0 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington 3/8" Mold Tite	1240 F.P.S.
Hi-Skor 700X 21.0 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington 3/8" Mold Tite	1295 F.P.S.
PB 23.5 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington 3/8" Mold Tite	1240 F.P.S.
PB 25.5 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Mold Tite	1330 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.0 grs.	Remington 97★	One Remington Power Piston #W23694	1220 F.P.S.
Hi-Skor 700X 18.0 grs.	Remington 97★	One Remington Post Wad #W23618	1225 F.P.S.
Hi-Skor 700X 19.0 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Mold Tite One Remington 1/4" Mold Tite	1235 F.P.S.
PB 22.5 grs.	Remington 97★	One Remington Power Piston #W23694	1250 F.P.S.
PB 22.5 grs.	Remington 97★	One Remington Post Wad #W23618	1245 F.P.S.
PB 23.0 grs.	Remington 97★	One Remington H Wad Two Remington 1/4" Mold Tite	1240 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic target cases with plastic inner base wad. These cases are grooved on the outside of their low brass.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

12 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 18.5 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1185 F.P.S.
Hi-Skor 700X 19.5 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1235 F.P.S.
Hi-Skor 700X 20.5 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1270 F.P.S.
PB 23.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1165 F.P.S.
PB 24.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1230 F.P.S.
PB 25.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester 3/8" Molded Fiber	1270 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" BUCKSHOT -

For Pellet Size And Count See Information Directly Under Wad Column

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 31.5 grs.	Remington 69	One Remington H Wad One Remington 3/8" Mold Tite Use with 27 Pellets of #4 Buck	1320 F.P.S.
SR 7625 31.0 grs.	Remington 69	One Remington H Wad One Remington 1/4" Mold Tite Use with 16 Pellets of #1 Buck	1310 F.P.S.
SR 7625 31.0 grs.	Remington 69	One Remington H Wad One Remington 1/4" Mold Tite Use with 12 Pellets of #0 Buck	1315 F.P.S.
SR 7625 31.0 grs.	Remington 69	One Remington H Wad One Remington 1/2" Mold Tite Use with 9 Pellets of #00 Buck	1320 F.P.S.
SR 4756 36.0 grs.	Remington 57★	One Remington H Wad One Remington 1/8" Felt Use with 12 Pellets of #00 Buck	1300 F.P.S.
SR 7625 31.0 grs.	Alcan G57F	One Alcan Air-Wedge One Remington 1/8" Felt Use with 8 Pellets of #000 Buck	1360 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases, both high and low brass with fiber inner base wads and with skive mouth.

TYPE OF CRIMP — FOLDED

12 GAUGE 2¾" BUCKSHOT -

For Pellet Size And Count See Information Directly Under Wad Column

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 33.5 grs.	Federal 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber Use With 27 Pellets of #4 Buck	1305 F.P.S.
SR 4756 33.5 grs.	Remington 97★	One Winchester Plastic Cup One Remington 1/4" Mold Tite Use With 16 Pellets of #1 Buck	1270 F.P.S.
SR 4756 36.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/4" Molded Fiber Use With 12 Pellets of #0 Buck	1320 F.P.S.
SR 7625 28.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber Use With 9 Pellets of #00 Buck	1330 F.P.S.
SR 4756 32.5 grs.	Remington 97★	One Winchester Plastic Cup One Remington 1/8" Felt Use With 12 Pellets of #00 Buck	1195 F.P.S.
SR 4756 35.0 grs.	Federal 209	One Winchester Plastic Cup One Winchester 1/4" Molded Fiber Use With 8 Pellets of #000 Buck	1335 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including AA target cases.

TYPE OF CRIMP — FOLDED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

12 GAUGE 2¾" SLUGS (443 GRAINS) - For Use Only With Lyman Slug Moulds. Cast From Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 23.0 grs.	Remington 57★	One Remington H Wad One Remington 1/2" Mold Tite One Remington .200" Card	1360 F.P.S.
PB 30.0 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Mold Tite One Remington .200" Card	1450 F.P.S.
SR 7625 37.0 grs.	Alcan G57F	One Remington H Wad One Remington 3/8" Mold Tite One Remington .200" Card	1580 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters 2¾" plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — ROLLED

12 GAUGE 2¾" SLUGS (443 GRAINS) - For Use Only With Lyman Slug Moulds. Cast From Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 23.0 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 1/4" Molded Fiber One Winchester .200" Card	1350 F.P.S.
PB 30.0 grs.	Winchester 209	One Winchester Plastic Cup Two Winchester 1/4" Molded Fiber One Winchester .200" Card	1425 F.P.S.
SR 7625 37.0 grs.	Winchester 209	One Winchester Plastic Cup One Winchester 1/2" Molded Fiber One Winchester .200" Card	1575 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases including AA target cases.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

16 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

The data for this section is for 2-3/4" shells only. In some older guns of foreign manufacture, chambers of 2-9/16" were common. It is not safe to use 2-3/4" shells in these chambers. Foreign 2-3/4" chambers are usually marked 70mm whereas 2-9/16" chambers are usually marked 65mm. Where there is doubt have a competent gunsmith measure your chambers.

Test Gun — Mossberg 500 — 28" Barrel

16 GAUGE 2¾" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 25.5 grs.	Remington 57✱	One Remington H Wad One Remington 5/16" Felt	1200 F.P.S.
Alcan AL-8 30.0 grs.	Alcan G57F	One Alcan P.G.S. Wad One Alcan .070" Nitro Card One Alcan 3/8" Feltan-Bluestreak	1260 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and skive mouth.

TYPE OF CRIMP — FOLDED

16 GAUGE 2¾" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 21.0 grs.	Remington 69	One Remington H Wad Two Remington 1/4" Felt	1190 F.P.S.
SR 7625 22.0 grs.	Remington 69	One Remington H Wad One Remington 1/4" Felt One Remington 3/16" Felt	1230 F.P.S.
SR 4756 24.5 grs.	Remington 57✱	One Remington H Wad Two Remington 3/16" Felt	1170 F.P.S.
SR 4756 26.0 grs.	Remington 57✱	One Remington H Wad One Remington 3/8" Felt	1250 F.P.S.
SR 4756 27.5 grs.	Remington 57✱	One Remington H Wad One Remington 3/8" Felt	1290 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE — 2, 4
- DUCKS — 4, 5, 6
- TURKEY — 2, 4
- FOX — 2, 4
- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

16 GAUGE 2¾" FIELD & TARGET - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 15.5 grs.	Remington 57★	One Remington .135" Card One Remington 3/8" Felt One Remington 5/16" Felt	1150 F.P.S.
PB 17.5 grs.	Remington 57★	One Remington H Wad One Remington 5/16" Felt One Remington 1/4" Felt	1160 F.P.S.
PB 19.5 grs.	Remington 69	One Remington H Wad Two Remington 1/4" Felt	1225 F.P.S.
SR 7625 20.0 grs.	Remington 69	One Remington H Wad Two Remington 5/16" Felt	1170 F.P.S.
SR 7625 21.5 grs.	Remington 69	One Remington H Wad One Remington 5/16" Felt One Remington 1/4" Felt	1230 F.P.S.
SR 4756 24.0 grs.	Remington 57★	One Remington H Wad Two Remington 1/4" Felt	1160 F.P.S.
SR 4756 25.5 grs.	Remington 57★	One Remington H Wad Two Remington 1/4" Felt	1235 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all plastic Remington and Peters cases, both high and low brass with a fiber inner base wad and with a skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½
- SKEET 8, 9
- TRAP 7½, 8

16 GAUGE 2¾" FIELD & TARGET - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 18.0 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber	1140 F.P.S.
SR 7625 20.0 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber	1190 F.P.S.
SR 7625 21.0 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber	1240 F.P.S.
SR 7625 19.0 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber	1140 F.P.S.
SR 4756 25.5 grs.	Winchester 209	One Remington H Wad One Winchester 1/2" Molded Fiber	1240 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½
- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

16 GAUGE 2¾" BUCKSHOT - All Loads for 12 Pellets of #1 Buck Only

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 24.0 grs.	Alcan G57F	One Remington .135" Card One Remington 5/16" Felt	1230 F.P.S.
SR 7625 25.5 grs.	Remington 69	One Remington .135" Card One Remington 5/16" Felt	1220 F.P.S.
SR 4756 27.0 grs.	Remington 57★	One Remington H Wad One Remington 3/16" Felt	1230 F.P.S.
SR 4756 27.0 grs.	Remington 57★	One Remington H Wad One Federal 1/4" Fiber	1235 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases, both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

16 GAUGE 2¾" BUCKSHOT - All Loads for 12 Pellets of #1 Buck Only

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 27.5 grs.	Remington 97★	One Remington H Wad One Winchester 1/4" Molded Fiber	1225 F.P.S.
SR 4756 27.0 grs.	Winchester 209	One Remington H Wad One Winchester 1/4" Molded Fiber	1225 F.P.S.
SR 4756 26.0 grs.	Winchester 209	One Remington H Wad One Federal 1/4" Molded Fiber	1235 F.P.S.
SR 4756 25.0 grs.	Federal 209	One Remington H Wad One Remington 1/4" Felt	1220 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases.

TYPE OF CRIMP — FOLDED

16 GAUGE 2¾" SLUGS (391 GRAINS) - For Use Only With Lyman Slug Moulds. Cast From Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 25.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt Two Remington .135" Card	1365 F.P.S.
SR 7625 28.0 grs.	Remington 69	One Remington .135" Card Two Remington 3/16" Felt One Remington .135" Card	1460 F.P.S.
SR 7625 29.5 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt One Remington .135" Card	1540 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases, both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

16 GAUGE 2¾" SLUGS (391 GRAINS) - For Use Only With Lyman Slug Moulds. Cast From Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 25.5 grs.	Winchester 209	One Winchester .135" Card One Remington 3/8" Felt One Winchester .200" Card	1435 F.P.S.
SR 4756 34.0 grs.	Alcan 220 Max-Fire	One Winchester .135" Card One Remington 5/16" Felt One Winchester .135" Card	1485 F.P.S.
SR 4756 35.0 grs.	Winchester 209	One Winchester .135" Card One Remington 3/8" Felt One Remington .135" Card	1500 F.P.S.

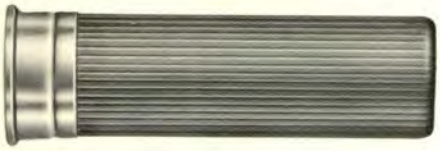
USE WITH CASES LISTED BELOW

Winchester and Western all plastic (no base wad) compression formed cases.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.



20 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

The 20 gauge gun is fast gaining in popularity. With the 1 ounce loads it will do anything that the lightest 12 gauge loads will do. If you have a 20 gauge gun chambered for the 3" shell it will enable you to shoot a 1-1/4 ounce load which will equal the standard 12 gauge Hi Velocity loading. Combine this, with the 7/8 ounce loads which are ideal for moderate ranges on small game birds, and you have a very versatile shotgun.

Test Gun — 2-3/4" Shells — Mossberg 500 — 26" Barrel

Test Gun — 3" Shells — Mossberg 500 — 26" Barrel

20 GAUGE 3" FIELD LOADS - 1¼ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 41.5 grs.	Alcan G57F	One Remington H Wad One Remington 1/4" Felt	1240 F.P.S.
IMR 4227 43.0 grs.	Alcan G57F	One Remington H Wad One Remington 3/16" Felt	1275 F.P.S.
IMR 4227 41.5 grs.	Alcan G57F	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber	1230 F.P.S.
IMR 4227 41.5 grs.	Remington 57★	One Remington H Wad One Remington 1/4" Felt	1250 F.P.S.
IMR 4227 44.0 grs.	Remington 57★	One Remington H Wad One Remington 3/16" Felt	1305 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE — 2, 4
- DUCKS — 4, 5, 6
- TURKEY — 2, 4
- FOX — 2, 4
- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

20 GAUGE 3" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 29.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt	1275 F.P.S.
IMR 4227 45.0 grs.	Alcan G57F	One Remington H Wad One Remington 5/16" Felt	1325 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

20 GAUGE 3" FIELD LOADS - 1⅛ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 42.0 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Felt	1290 F.P.S.
IMR 4227 43.5 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Felt	1315 F.P.S.
IMR 4227 45.0 grs.	Remington 57★	One Remington H Wad One Remington 5/16" Felt	1345 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

20 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 17.0 grs.	Remington 69	One Remington Power Piston #W23678	1145 F.P.S.
SR 7625 18.5 grs.	Remington 69	One Remington Power Piston #W23678	1170 F.P.S.
SR 7625 19.5 grs.	Remington 69	One Remington Power Piston #W23678	1205 F.P.S.
SR 4756 21.0 grs.	Alcan G57F	One Remington Power Piston #W23678	1160 F.P.S.
SR 4756 22.5 grs.	Remington 57★	One Remington Power Piston #W23678	1170 F.P.S.
SR 4756 23.5 grs.	Remington 57★	One Remington Power Piston #W23678	1210 F.P.S.
SR 4756 23.0 grs.	Remington 57★	One Remington H Wad One Remington 3/8" Felt	1220 F.P.S.
SR 4756 29.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt	1340 F.P.S.
Alcan AL-8 28.0 grs.	Alcan G57F	One Alcan P.G.S. Wad One Alcan .070" Nitro Card One Alcan 3/8" Feltan-Bluestreak	1260 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases, both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

20 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 20.0 grs.	Winchester 209	One Remington Power Piston #W23678	1145 F.P.S.
IMR 4227 34.0 grs.	Federal 209	One Alcan P.G.S. Wad One Winchester 3/8" Molded Fiber One Alcan Kwik-Sert	1150 F.P.S.
IMR 4227 36.0 grs.	Federal 209	One Alcan P.G.S. Wad One Winchester .080" Card One Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1210 F.P.S.
IMR 4227 38.0 grs.	Federal 209	One Alcan P.G.S. Wad One Winchester .080" Card One Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1270 F.P.S.
IMR 4227 36.0 grs.	Alcan 220 Max-Fire	One Alcan P.G.S. Wad One Winchester .080" Card One Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1175 F.P.S.
Alcan AL-7 20.0 grs.	Alcan 220 Max-Fire	One Alcan P.G.S. Wad One Alcan .070" Nitro Card One Alcan 3/8" Feltan-Bluestreak One Alcan Kwik-Sert	1175 F.P.S.
Alcan AL-7 22.0 grs.	Alcan 220 Max-Fire	One Alcan .135" Nitro Card One Alcan 3/8" Feltan-Bluestreak One Alcan Kwik-Sert	1200 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western plastic AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE 2, 4
- DUCKS 4, 5, 6
- TURKEY 2, 4
- FOX 2, 4
- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½,
- PARTRIDGE 6, 7½
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

20 GAUGE 2¾" FIELD LOADS - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 19.0 grs.	Remington 69	One Remington Power Piston #W23678	1285 F.P.S.
SR 7625 22.0 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt One Remington 3/16" Felt	1315 F.P.S.
SR 4756 22.0 grs.	Alcan G57F	One Remington H Wad Two Remington 3/8" Felt	1265 F.P.S.
SR 4756 23.0 grs.	Alcan G57F	One Remington H Wad Two Remington 3/8" Felt	1300 F.P.S.
SR 4756 25.0 grs.	Remington 57★	One Remington Power Piston #W23678	1330 F.P.S.
SR 4756 25.5 grs.	Remington 57★	One Remington H Wad Two Remington 3/8" Felt	1310 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½,
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

20 GAUGE 2¾" FIELD LOADS - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 20.0 grs.	Alcan 220 Max-Fire	One Remington .135" Card One Remington 1/4" Felt One Remington 3/16" Felt	1225 F.P.S.
SR 4756 21.0 grs.	Alcan 220 Max-Fire	One Remington .135" Card One Remington 1/4" Felt One Remington 3/16" Felt	1275 F.P.S.
SR 4756 22.0 grs.	Alcan 220 Max-Fire	One Remington .135" Card Two Remington 3/16" Felt	1325 F.P.S.
SR 4756 23.0 grs.	Alcan 220 Max-Fire	One Remington .135" Card Two Remington 3/16" Felt	1380 F.P.S.
SR 4756 24.0 grs.	Remington 97★	One Remington .135" Card One Remington 3/8" Felt	1350 F.P.S.
Alcan AL-5 20.0 grs.	Alcan 220 Max-Fire	One Alcan P.G.S. Wad Two Alcan 1/4" Feltan-Bluestreak	1260 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters target cases with plastic inner base wad.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½,
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

20 GAUGE 2¾" FIELD LOADS - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 21.5 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1215 F.P.S.
SR 4756 22.0 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1250 F.P.S.
Alcan AL-5 20.0 grs.	Alcan 220 Max-Fire	One Alcan P.G.S. Wad One Alcan 3/8" Feltan-Bluestreak One Alcan 1/4" Feltan-Bluestreak One Alcan Kwik-Sert	1240 F.P.S.
Alcan AL-5 21.0 grs.	Alcan 220 Max-Fire	One Alcan .135" Nitro Card One Alcan 3/8" Feltan-Bluestreak One Alcan 1/4" Feltan-Bluestreak One Alcan Kwik-Sert	1240 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western plastic AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½,
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

20 GAUGE 2¾" TARGET - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 17.0 grs.	Remington 69	One Remington H Wad One Remington 3/8" Felt One Remington 3/16" Felt	1150 F.P.S.
PB 18.5 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt One Remington 3/16" Felt	1205 F.P.S.
SR 7625 18.0 grs.	Remington 69	One Remington H Wad One Remington 3/8" Felt One Remington 3/16" Felt	1160 F.P.S.
SR 7625 19.0 grs.	Remington 69	One Remington H Wad One Remington 3/8" Felt One Remington 3/16" Felt	1210 F.P.S.
SR 4756 21.0 grs.	Remington 57★	One Remington H Wad Two Remington 1/4" Felt	1150 F.P.S.
SR 4756 22.5 grs.	Remington 57★	One Remington H Wad Two Remington 1/4" Felt	1210 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

20 GAUGE 2¾" TARGET - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
PB 15.0 grs.	Remington 97★	One Remington Power Piston #W23678	1140 F.P.S.
SR 7625 14.0 grs.	Federal 209	One Remington Power Piston #W23678	1110 F.P.S.
SR 7625 14.5 grs.	CCI 109	One Remington Power Piston #W23678	1130 F.P.S.
SR 7625 14.5 grs.	Alcan 220 Max-Fire	One Remington Power Piston #W23678	1140 F.P.S.
SR 7625 15.5 grs.	Alcan WW209F	One Remington Power Piston #W23678	1175 F.P.S.
SR 7625 16.0 grs.	Winchester 209	One Remington Power Piston #W23678	1195 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters target cases with plastic inner base wad.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

20 GAUGE 2¾" TARGET - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 16.5 grs.	Alcan 241	One Remington Power Piston #W23678	1200 F.P.S.
SR 7625 20.0 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Felt	1140 F.P.S.
SR 4756 21.5 grs.	Remington 97★	One Remington H Wad One Remington 3/8" Felt	1205 F.P.S.
Alcan AL-5 19.0 grs.	Alcan 220 Max-Fire	One Remington Power Piston #W23678	1200 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters target cases with plastic inner base wad.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

20 GAUGE 2¾" TARGET - ⅞ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 16.0 grs.	Winchester 209	One Remington H Wad One Winchester 3/8" Molded Fiber One Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1130 F.P.S.
SR 7625 17.0 grs.	Winchester 209	One Remington H Wad One Winchester 3/8" Molded Fiber One Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1180 F.P.S.
SR 4756 20.5 grs.	Winchester 209	One Remington H Wad Two Winchester 1/4" Molded Fiber One Alcan Kwik-Sert	1155 F.P.S.
SR 4756 19.5 grs.	Remington 97★	One Winchester AA Wad #WAA20	1140 F.P.S.
SR 4756 20.0 grs.	Remington 97★	One Winchester AA Wad #WAA20	1170 F.P.S.
SR 4756 20.5 grs.	Remington 97★	One Winchester AA Wad #WAA20	1200 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western plastic AA target cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

20 GAUGE 2¾" BUCKSHOT - All Loads For 20 Pellets of #3 Buck Only

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 26.0 grs.	Remington 57★	One Remington .135" Card One Remington 3/16" Felt	1195 F.P.S.
SR 4756 23.5 grs.	Remington 57★	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber	1205 F.P.S.
SR 4756 23.0 grs.	Alcan G57F	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber	1210 F.P.S.
SR 4756 23.0 grs.	Alcan G57F	One Remington H Wad One Winchester 1/4" Molded Fiber	1215 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and with skive mouth.

TYPE OF CRIMP — FOLDED

20 GAUGE 2¾" BUCKSHOT - All Loads For 20 Pellets of #3 Buck Only

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 23.0 grs.	Remington 97★	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber	1200 F.P.S.
SR 4756 23.0 grs.	Remington 97★	One Remington H Wad One Winchester 1/4" Molded Fiber	1205 F.P.S.
IMR 4227 35.5 grs.	Federal 209	One Alcan P.G.S. Wad One Remington 3/16" Felt	1200 F.P.S.
IMR 4227 35.5 grs.	Federal 209	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber	1205 F.P.S.

USE WITH CASES LISTED BELOW

Winchester and Western plastic plastic AA target cases.

TYPE OF CRIMP — FOLDED

20 GAUGE 2¾" SLUGS (353 GRAINS) - For Use Only With Lyman Slug Moulds. Cast With Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 52.0 grs.	Alcan G57F	One Remington H Wad One Remington 1/4" Felt One Remington .135" Card	1565 F.P.S.
IMR 4227 54.0 grs.	Alcan G57F	One Remington H Wad One Remington 3/16" Felt One Remington .135" Card	1625 F.P.S.
IMR 4227 52.0 grs.	Alcan G57F	One Alcan P.G.S. Wad One Winchester 1/4" Molded Fiber One Remington .135" Card	1575 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases. This group includes all Remington and Peters plastic cases both high and low brass with fiber inner base wad and skive mouth.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

20 GAUGE 2¾" SLUGS (353 GRAINS) - For Use Only With Lyman Slug Moulds. Cast With Pure Lead.

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 50.0 grs.	Federal 209	One Remington H Wad One Remington 3/16" Felt One Remington .135" Card	1555 F.P.S.
IMR 4227 52.0 grs.	Alcan 220 Max-Fire	One Remington H Wad One Remington 3/16" Felt One Remington .135" Card	1570 F.P.S.
IMR 4227 52.0 grs.	Federal 209	One Remington H Wad One Remington 3/16" Felt One Remington .135" Card	1610 F.P.S.

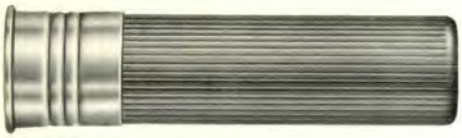
USE WITH CASES LISTED BELOW

Winchester and Western plastic AA target cases.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.



28 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

The 28 gauge is an excellent choice for the beginner or recoil shy shooter. Offering slightly better patterns it will give the beginner more confidence than he could obtain using a .410. Some older 28 gauge guns were chambered for 2-1/2" shells. Do not use 2-3/4" shells in any 28 gauge gun unless it is chambered for this length case.

Test Gun — Remington 11-48 — 26" Barrel

28 GAUGE 2¾" FIELD LOADS - 1 oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 4756 22.5 grs.	Remington 69	One Winchester .080" Card One Winchester 1/4" Molded Fiber	1155 F.P.S.
IMR 4227 31.0 grs.	Alcan G57F	One Remington .050" Card One Remington 3/16" Felt	1135 F.P.S.
IMR 4227 32.0 grs.	Alcan G57F	One Remington .050" Card One Remington 3/16" Felt	1170 F.P.S.
IMR 4227 33.0 grs.	Alcan G57F	One Remington .050" Card One Remington 3/16" Felt	1200 F.P.S.
IMR 4227 33.0 grs.	Remington 57★	One Remington .135" Card One Remington 3/16" Felt	1210 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- GEESE — 2, 4
- DUCKS — 4, 5, 6
- TURKEY — 2, 4
- FOX — 2, 4
- RABBIT — 4, 5, 6, 7½
- SQUIRREL — 6, 7½
- PARTRIDGE — 6, 7½, 8, 9
- QUAIL — 7½, 8, 9
- PHEASANT — 6, 7½

28 GAUGE 2¾" FIELD & TARGET - ¾ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
Hi-Skor 700X 12.5 grs.	Remington 69	One Remington Power Piston #W23680	1160 F.P.S.
Hi-Skor 700X 13.5 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt One Remington 5/16" Felt	1155 F.P.S.
PB 15.5 grs.	Remington 69	One Remington .135" Card Two Remington 5/16" Felt	1150 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

Cont'd. Next Page

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

Continued

28 GAUGE 2¾" FIELD & TARGET - ¾ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
SR 7625 14.5 grs.	Remington 69	One Remington Power Piston #W23680	1160 F.P.S.
SR 7625 15.5 grs.	Remington 69	One Remington .135" Card Two Remington 3/8" Felt	1150 F.P.S.
SR 7625 15.5 grs.	Remington 69	One Remington Power Piston #W23680	1210 F.P.S.
SR 7625 16.5 grs.	Remington 69	One Remington .135" Card One Remington 3/8" Felt One Remington 5/16" Felt	1205 F.P.S.
SR 4756 18.0 grs.	Remington 57✱	One Remington .135" Card One Remington 5/16" Felt One Remington 1/4" Felt	1135 F.P.S.
SR 4756 19.0 grs.	Remington 57✱	One Remington .135" Card One Remington 5/16" Felt One Remington 1/4" Felt	1195 F.P.S.
SR 4756 21.0 grs.	Remington 57✱	One Remington .135" Card One Remington 1/4" Felt One Remington 3/16" Felt	1290 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- RABBIT 4, 5, 6, 7½
- SQUIRREL 6, 7½
- PARTRIDGE 6, 7½, 8, 9
- QUAIL 7½, 8, 9
- PHEASANT 6, 7½
- SKEET 8, 9
- TRAP 7½, 8

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

410 GAUGE

SEE SUB HEADINGS FOR SHELL LENGTHS AND SHOT WEIGHTS

Components which are available to the reloader and which are suitable for .410 gauge are very limited in number. Therefore data for the .410 is necessarily limited. Do not attempt to use 3" shells in any gun unless the gun is clearly marked for such use.

Test Gun — 2-1/2" Shells — Remington 11-48 — 26" Barrel

Test Gun — 3" Shells — Remington 11-48 — 26" Barrel

410 GAUGE 3" FIELD LOADS - ½ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 19.0 grs.	Remington 69	One Remington 1/4" Felt Two Remington 3/16" Felt	1190 F.P.S.
IMR 4227 19.5 grs.	Remington 69	One Remington 1/4" Felt Two Remington 3/16" Felt	1270 F.P.S.
IMR 4227 17.0 grs.	Alcan G57F	One Remington 1/4" Felt Two Remington 3/16" Felt	1115 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- 6 and 7½ FOR ALL GAME
- 8 and 9 FOR TARGETS

410 GAUGE 2½" FIELD & TARGET - ½ oz. SHOT

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 16.5 grs.	Alcan G57F	One Remington 3/16" Felt One Remington 1/8" Felt	1100 F.P.S.
IMR 4227 17.0 grs.	Remington 57★	One Remington 3/16" Felt One Remington 1/8" Felt	1150 F.P.S.
IMR 4227 18.5 grs.	Remington 69	One Remington 3/16" Felt One Remington 1/8" Felt	1210 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — FOLDED

SUGGESTED SHOT SIZES:

- 6 and 7½ FOR ALL GAME
- 8 and 9 FOR TARGETS

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

410 GAUGE 3" SLUGS (238 GRAINS) - Use Only With Lyman Slug Moulds. Cast with #2 Alloy.

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 20.0 grs.	Remington 69	Three Remington 1/4" Felt One Remington 1/8" Felt One Remington .135" Card	1335 F.P.S.
IMR 4227 22.0 grs.	Remington 69	Three Remington 1/4" Felt One Remington 1/8" Felt One Remington .135" Card	1465 F.P.S.
IMR 4227 23.5 grs.	Remington 69	Three Remington 1/4" Felt One Remington 1/8" Felt One Remington .135" Card	1535 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — ROLLED

410 GAUGE 2½" SLUGS (383 GRAINS) - Use Only With Lyman Slug Moulds. Cast with #2 Alloy.

POWDER	PRIMERS	WADS*	VELOCITY
IMR 4227 20.0 grs.	Remington 69	Three Remington 3/16" Felt One Remington .135" Card	1320 F.P.S.
IMR 4227 22.0 grs.	Remington 69	Three Remington 3/16" Felt One Remington .135" Card	1445 F.P.S.
IMR 4227 23.0 grs.	Remington 69	Three Remington 3/16" Felt One Remington .135" Card	1565 F.P.S.

USE WITH CASES LISTED BELOW

Remington and Peters plastic S. P. cases.

TYPE OF CRIMP — ROLLED

NOTE — DO NOT ALTER OR SUBSTITUTE THE ABOVE COMPONENTS.

*FOR WAD PRESSURE, SEE PREAMBLE TO DATA SECTION.

SHOTSHELL BALLISTICS AND TIPS

It is not surprising that many handloaders, who are knowledgeable about metallic cartridge reloading, scratch their heads in bewilderment when confronted with the task of loading a shotshell. If a handloader tries to assimilate all that he reads about shotshell reloading, he can quite easily become confused.

Little has been written about the loading of today's shotshells which has indeed become a modern science. Let's face it, dad's old paper case has just about departed the scene for good, and along with it bulk shotgun powder and hair wads. They have been replaced by more sophisticated ballistic materials. Shotshells today are far superior to those of the past. Yet many old ideas and assumptions, which no longer apply, are still being taught as ballistic fact to the modern reloader. So, to clear the air, let's forget the past and see what happens when a load is built out of today's components.

CHAMBER PRESSURE

Of course, the amount of safe chamber pressure has not changed. Ten thousand to ten thousand, five hundred pounds P.S.I. still constitutes a safe maximum reload for modern steel (not Damascus) shotgun in good condition. What has changed are the components that are employed to build and to control chamber pressure. As the components become more efficient, they also require more care in the way they are selected and used. Each case brand, each primer, each variation in wad composition and configuration sets up a completely different set of circumstances which must be considered in loading and in its affect on results. In our tests, for instance, changes in components (case brand, wads or primer) have caused pressures to climb from a safe 6,000 pounds P.S.I. to a very questionable 16,000 pounds P.S.I. Unlike fired riflle and pistol cases, shotshell cases do not lend themselves to reliable pressure interpretation. Generally speaking, indications of excessive chamber pressure cannot be detected on the fired shotshell casing until safe pressures have been greatly exceeded.

Developing shotshell reloading data, using todays components, is an exacting technical job. It requires somewhat more elaborate equipment than you are likely to find on the average reloading bench. The day has long since past when it can be safely assumed that any combination of components that seem to "fit" can be assembled into a safe and efficient reload. For example: there are several brands of primers that "fit" the primer pockets of each of dozens of brands and gauges of shells. Relying purely on this "physical fit" could result in a "ballistic misfit" when the ammunition is assembled and fired.

The same can be said of the wad column which is used to fill the space between the powder and shot charge. It must be compatible with the rest of the load. A change of primer or wad column in otherwise identically loaded ammunition almost always requires a change in the powder charge. Not infrequently another powder of different burning characteristics must be used if we alter one of the components and wish to maintain a similar ballistic level.

The Shotshell data in this Handbook lists the cases and exact components used in each load. All loads have been carefully tested by our technicians. The reader is cautioned against altering, or substituting the components shown.

WAD PRESSURE

Considering all aspects of reloading good shotshell ammunition, the question of wad pressure seems to get attention which is all out of proportion to its actual significance. While we cannot speak for the recommendations of others, we can speak for the data contained in this Handbook. How much wad pressure do you need on the wad column? Never very much . . . sometimes none at all. Very simply stated, you need whatever pressure is required to get the wad through the wad guide and down on the powder charge. If there is not room in the case to accommodate the shot charge and crimp then you need slightly more pressure. Add pressure (from one to one hundred pounds) to compress the wads enough so that the shot charge will fit the case, **and no more.** For further information on wads, see "Shotshell Wads" chapter which follows.

POWDER AND SHOT BUSHINGS

All shotshell reloading machines now manufactured, measure powder and shot charges by volume. As shot density may vary greatly from brand to brand, or from one size shot to another, manufacturers must use a "middle of the road" type of tolerance in designing shot bushings for these machines. This tolerance is usually computed using No. 7-1/2 chilled shot. If a shot bushing, which at one time dropped a one and one-eighth ounce charge, suddenly goes crazy and begins to throw a heavier or lighter charge, don't write the manufacturer. The variation is probably in the shot itself.

To a smaller extent, you may also encounter variations in powder density from lot to lot. A new can of powder may have a slightly different density than the last can of this same powder. Considering all variations, however, the human variation in operating the machine is usually the greatest culprit. It is not possible to walk up to a reloading machine and throw a powder or shot charge and obtain an accurate appraisal of what the bushing will throw during the normal loading cycle. Bushing dimensions are very carefully calculated and take into consideration the vibrations and jarring that the machine receives during the complete loading cycle. If you operate the metering bars, without actually loading a shell, your charges will always be light.

After you set up for a load, or change from one brand of shot, or lot of powder, take the precaution of weighing both your powder and shot charge on an accurate scale. Remember, you must actually go through the loading operation to obtain an accurate reading of what the bushing will throw. If the variation in either powder or shot is no more than five percent, continue to load using the metering bars on the machine.

If you encounter a greater variation, we recommend that you weigh all of your charges (both powder and shot) on a reloading scale until you have corrected the problem.

DRAM EQUIVALENT

No one can explore the mysteries of shotshell reloading without uncovering the biggest imponderable of all, "Dram Equivalent". This term has been around for years, but it can be very misleading.

Shooters themselves have misconstrued the meaning of the term "dram equivalent" in various ways. Some shooters honestly believe that dram equivalent represents the actual powder charge. Of course, it does not. Some read chamber pressure into this time worn term. Actually, dram equivalents and chamber pressures are totally unrelated. What it really means is that these shells are loaded with sufficient smokeless powder to drive the shot charge at a **velocity** which is **equivalent** to the velocity of a similar charge driven by a given number of drams of black powder. Confusing? You bet it is!

The following is a list of dram equivalents and the approximate velocities which they represent. Note that all of the dram equivalents are the same, although the velocities are different according to gauge and shot weight.

	Equiv.			
12 GAUGE	3 drams	1 oz.	#7½	(approx. vel. 1235 F.P.S.)
	3 drams	1-1/8 oz.	#7½	(approx. vel. 1200 F.P.S.)
	3 drams	1-1/4 oz.	#7½	(approx. vel. 1165 F.P.S.)
16 GAUGE	3 drams	1 oz.	#7½	(approx. vel. 1275 F.P.S.)
	3 drams	1-1/8 oz.	#7½	(approx. vel. 1240 F.P.S.)
	3 drams	1-1/4 oz.	#7½	(approx. vel. 1205 F.P.S.)
20 GAUGE	3 drams	7/8 oz.	#7½	(approx. vel. 1320 F.P.S.)
	3 drams	1 oz.	#7½	(approx. vel. 1275 F.P.S.)
28 GAUGE	3 drams	3/4 oz.	#7½	(approx. vel. 1565 F.P.S.)
	3 drams	1 oz.	#7½	(approx. vel. 1475 F.P.S.)

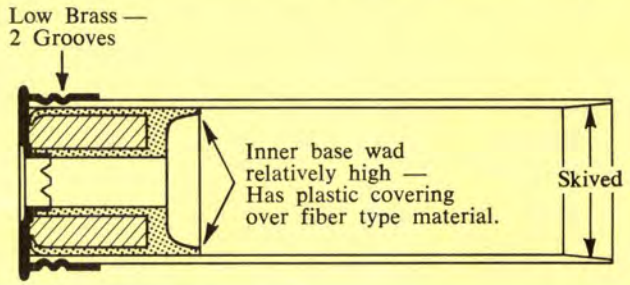
The loads shown in this Handbook are not listed by a dram equivalent. They are listed instead by their actual chronographed velocity.

IDENTIFYING YOUR FIRED CASE

When following the shotshell data as it is laid out in this Handbook, it will be necessary to identify your fired casing exactly and then use this casing only where it is recommended. Six brands of shell casings are covered. These are REMINGTON, PETERS, WINCHESTER, WESTERN, FEDERAL and ALCAN. Identifying Federal or Alcan cases should not be difficult because these cases are marked with names like "Trap Max" etc. which are printed with our loading data wherever they appear.

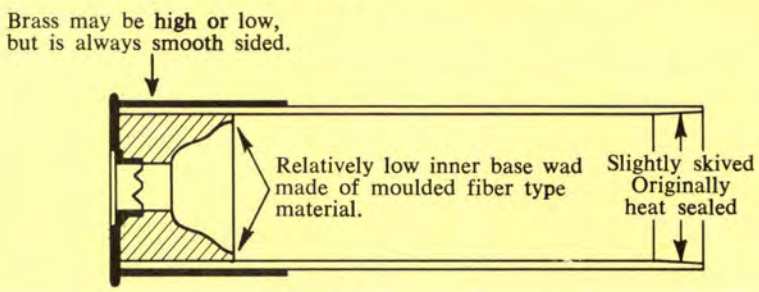
Remington/Peters and Winchester/Western cases may cause some confusion. In order to make their identification easier, we offer the following text and illustrations. The cases listed were chosen for their reloadability. For example, if a particular type case burned through on the first or second firing, we did not feel that it had a suitable reloading life, and therefore did not include it. The Remington/Peters and Winchester/Western cases are as follows:

REMINGTON & PETERS PLASTIC TARGET CASES 12 OR 20 GA.



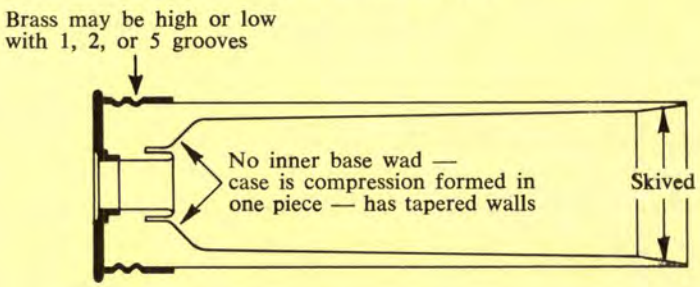
Target cases (originally loaded for trap and skeet) in either Remington or Peters brand have the same inner construction as pictured above. These cases have a solid plastic inner base wad in 20 gauge and a moulded fiber wad with plastic covering in 12 gauge. They have low outside brass with two grooves and are manufactured in 12 and 20 gauge only.

REMINGTON & PETERS PLASTIC S.P. CASES
10, 12, 16, 20, 28 or 410 GA.



Field and Express load (steel/plastic) cases in either Remington or Peters brand have the same inner construction as pictured above. These cases have a moulded fiber inner base wad and a steel head which is brass coated. Regardless of whether the case has high or low outside brass, it may be used with this group. This type of casing is manufactured in 10, 12, 16, 20, 28 and 410 gauge. Original buckshot or slug cases have no skiving at the mouth and are not recommended for fold crimp loads.

WINCHESTER & WESTERN COMPRESSION FORMED PLASTIC CASES:
12, 16 and some 20 GA.



This group includes all 12 gauge AA target, Super Speed and Super X cases, plus 16 gauge Super Speed and Super X cases. 20 gauge AA target cases are also included. (20 gauge Super Speed and Super X cases, while they are compression formed, are not included for they vary slightly in volume from the 20 Ga. AA case).

CASE LIFE

Aside from its ability to deliver a good pattern at a respectable velocity and range, the next kindest thing we can say about a particular reload is that it is easy on the case. Case life is important, for cases cost money and saving them as much as possible is the object of the game.

With the cases and loads listed in this Handbook, you may expect a reasonably long case life. Depending upon the load you choose, five to fifteen loadings per case is a pretty close estimate. The longest case life will be experienced with those loads which make use of a shot sleeve. Besides improving patterns, shot sleeves also prolong case life by protecting the mouth of the case from the wearing effects of the shot charge.

However, repeated firing and reloading will eventually wear out the cases. Correct reloading requires the inspection of each case before reloading it — discarding those that show defects.

When inspecting cases, look for the following defects and discard any cases on which they appear:

BASE WAD Check the case to insure that inner base wad is still intact and that parts of it have not blown away. A good procedure is to use a wood dowel as a depth gauge as explained in a previous section, "Loading Shotshells."

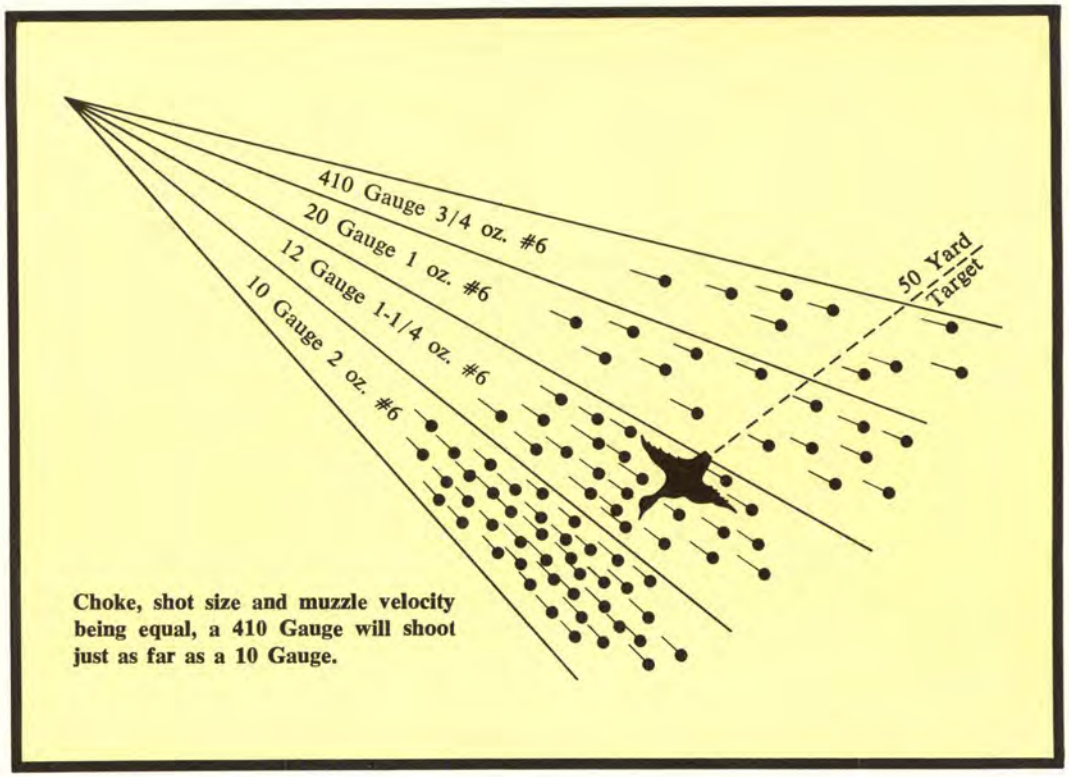
PRIMER Check for loose primers when loading and for evidence of gas leakage around a fired primer. This is an indication that the primer pocket has stretched due to fatigue.

CASE WALLS Check the case walls for pin hole burns. Also, twist the case head slightly with your fingers to see if it has loosened from the case body.

CASE MOUTH Discard cases that have torn or blown-away mouths. These cases will not crimp properly.

PATTERN

Some shooters hold the opinion that a large gauge shotgun will shoot further than a smaller gauge. This isn't so. Choke, shot size and muzzle velocity being equal, the shot charge from a 410 will travel equally as far as the shot charge from a 10 gauge. The big difference is in the density of their patterns. Bigger gauges throw (or are capable of throwing) more shot. This makes them more effective at a long range. A good full choke 10 gauge, for instance, will place more shot in a 30″ circle at 50 yards than we could possibly load into a 410 cartridge.

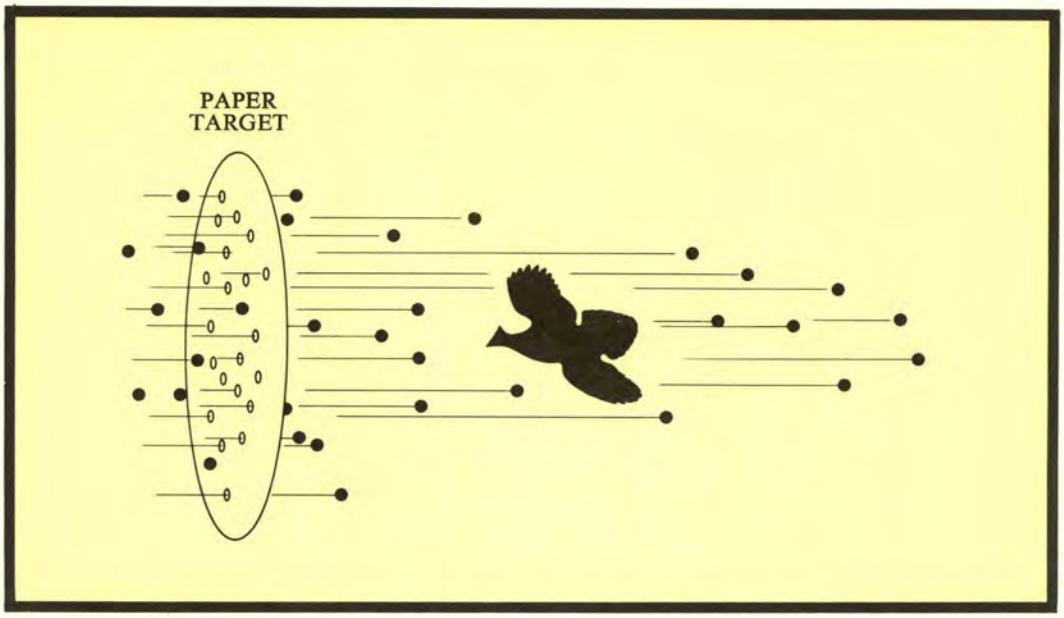


Choke, shot size and muzzle velocity being equal, a 410 Gauge will shoot just as far as a 10 Gauge.

While our 50-yard target shown above flies right through the lighter patterns without being hit, he runs into greater difficulty as more and more shot gets into his flight path. Were he to receive a hit by one or two pellets from the smaller gauges, they would strike with the same force and do as much damage as an equal number of pellets from the 12 or the 10 gauge.

Patterning our shotgun on paper is important for two reasons. One, it provides a method for selecting the best choke and shot size for a particular range and target. Two, it gives us a mental picture of the ability of our shotgun at each specific range. The second reason is the more important because it teaches us that there is a time to shoot and a time not to shoot. We learn to time our shot and to take it where range and pattern are most effective.

To pattern your shotgun, secure several large sheets of brown wrapping paper. Draw a 30″ circle on each piece and make a mark, clearly visible, indicating its center. As you will be shooting at the paper, it will be necessary to secure it in a target position. Place your paper target down range at a distance that is average for the majority of your shooting. For example, if your average shot is between 30 to 40 yards, place your patterning target 35 yards from the muzzle. Fire your shotgun at the center mark on the target. Check your pattern and concern yourself only with those pellets that strike inside the 30″ circle. Bear in mind that the density of your pattern must be such as to not allow a flying target to slip through it.



Remember, your shot reaches the target in a somewhat strung out fashion (shot string). The pattern picture that you see on your paper target is not completely accurate. Unless the circle is well covered, a fast-flying bird could slip through.

Pattern density may be adjusted in a variety of ways. One, use another shotgun of a larger or smaller gauge. Two, change the choke of your present gun to a tighter or more open boring. Three, select a load that contains a heavier or lighter shot charge. Four, vary the density even further by experimenting with different shot sizes.

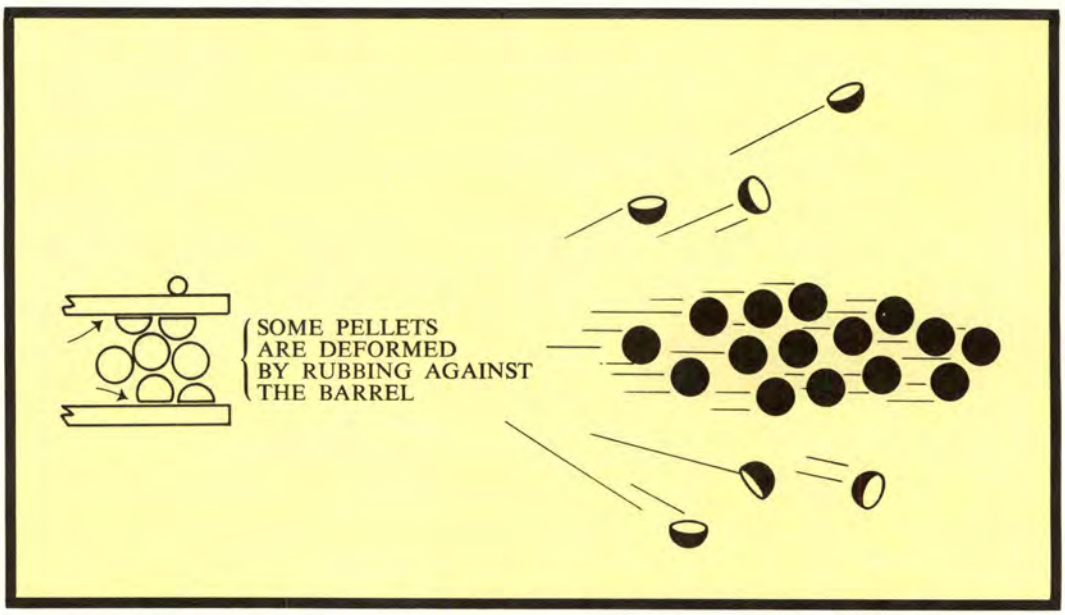
The chart below shows the number of pellets that are contained in a one ounce shot charge. Note, for example, how we can almost double the number of pellets in our charge if we change from 6's to 8's.

SHOT SIZES

No.	9	8	7½	6	5	4	2
Diameter in inches	.08	.09	.095	.11	.12	.13	.15
Approx. pellets in 1 oz.	585	410	350	225	170	135	90

Some pellets loaded into our shot cartridge will either not reach the target at all, or they will arrive at the target in a deformed state. These are the pellets which, due to the friction of rubbing against the barrel, are no longer round in shape. As these pellets lose velocity rapidly and do not fly true, they are lost from the effective shot charge. Naturally, the more deformed the shot, the worse the pattern.

Some gauges, due to the shape of their shot column, will deform more shot than others. The 410, for instance, is a notorious shot destroyer, as its long slender shot column forces a large percentage of its charge against the barrel. This, coupled with its light 3/4 ounce charge has an adverse effect on its patterns. Using a smaller size shot would help this condition in the 410. In other gauges, the deformation of shot can be almost totally eliminated by using the shot sleeves that are popular today. These sleeves offer a tremendous advantage in obtaining better patterns.



Part of the shot charge is deformed by friction. These pellets are usually lost from the pattern.

SHOTSHELL WADS

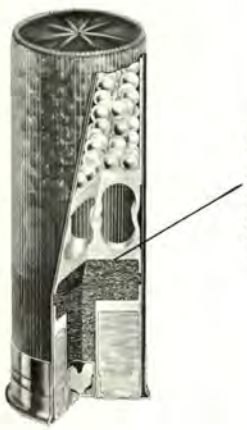
To achieve the proper ballistics for a finished shotshell, the correct selection of a wad is vitally important. Indiscriminate use of wads can result in bloppers, muzzle flashes, excessive breech pressures and erratic velocities. Under no circumstances should wad columns be altered.

Wads should be seated individually. Use just enough wad pressure to seat the over powder wad firmly on the powder. Each successive wad should be seated with only enough pressure to insure its bottoming on the previous wad. The amount of pressure required varies with the type of wad and the type of case used. A case with a tapered wall requires the application of a greater than normal amount of wad pressure. This may vary from 1 to 40 or 50 lbs.

A good practice is to make up a sample round. Load your powder and seat the wads with what you feel is the minimum pressure requirement. Then, before loading the shot, cut down one side of the case with a knife. Visually inspect the wads to determine whether they have properly bottomed. Be sure no air space is present between powder and the over powder wad, or between the individual wads. If any such spaces exist, more wad pressure is needed.

If you find that due to difference in shot diameter, or density, you have insufficient room for a good crimp, apply additional wad pressure to the top of the wad column. This will compress the wads somewhat and allow more room for the shot charge and crimp. Use only as much pressure as is necessary to insure a good crimp. Changes in shot size often require a change in wad pressure. A 1-1/4 ounce charge of #4 shot will require more room than an equal weight of #9 shot.

The use of a wad column which has a sleeve around the shot column is desirable. These sleeves prevent the shot from becoming deformed in its passage through the bore, thus improving patterns. Of course, leading is completely avoided with such wads. But their greatest advantage, is extended case life. The abrasive action of the shot on the case mouth is eliminated and we can, in many instances, double the case life over that of a non-sleeved shot charge. Of course, the one-piece wads which combine a shot sleeve are the ultimate in convenience and long case life.



The following wad listing does not by any means include all of the wads available to the handloader. It does, however, cover all the wads used in the data contained in this Handbook. It is offered as a guide to help you to recognize the various types of wads and to understand their proper usage.

REMINGTON WADS

Card Wads

Card Wads. These cardboard wads in .135″ size were used in all gauges from 10 to 410. The .200″ size was used in 12 and 16 gauge. These are basically over powder wads. However, their use is extended to a general filler wad also. Normally packed 1,000 to a box.

"H" Wads

"H" Wads. These gas sealing, polyethylene wads are very efficient over powder wads. They were used in 12, 16 and 20 gauges. Normally packed 250 to a box.

Felt Wads

Felt Wads. These wads were used in all gauges from 10 to 410. While designed primarily as a filler wad, they are in some instances used directly over the powder. Sizes used included 1/8″, 3/16″, 1/4″, 5/16″, 3/8″, and 7/16″. Referred to as Premium Felt by Remington, they are normally packed 500 to a box.

"Mould-Tite" Wads

"Mould-Tite" Wads. Available only in 12 gauge. The 1/4″, 3/8″ and 1/2″ sizes are used exclusively as filler wads. Lubricated, they are normally packed 500 to a box.

"Power Pistons"

"Power Pistons". These one-piece plastic wad columns are very efficient. They increase case life over conventional type wadding by preventing the abrasive shot from deteriorating the case mouth. This is accomplished by a protective shot sleeve. Several styles were used in the 12 gauge (#W23694, a white colored wad and #W23676, a green colored wad). The 20 gauge wad (#W23678) used and the 28 gauge wad (#W23680) used, were both white colored. Normally packed 1,000 to a box.

REMINGTON WADS (Continued)

"Post Wad"

"Post Wad". This green plastic wad is available only in 12 gauge. It is similar to the power pistons with the exception of a post which fills the center of the shot container. The purpose of this post is to help open up patterns in full choked guns. These wads were designed for 16 yard trap shooters. Remington code number for this wad is #W23618 and they are normally packed 1,000 to a box.

ALCAN WADS

"Nitro" Card Wads

"Nitro" Card Wads. Wads in the .070″ and .135″ sizes were used in 20 gauge. They are basically an over powder wad, but their usefulness is sometimes extended to that of a general filler wad. Normally packed 1,000 to a box.

Air-Wedge Wads

Air-Wedge Wads. Available only in 12 gauge and used exclusively as an over powder wad. They have a very definite top and bottom. The bottom (which goes against the powder charge) is the side on which no ribs can be seen.

PGS Wads

PGS Wads. Plastic gas sealing wads used solely as an over powder wad. Has a very definite top and bottom (cup side against the powder). Used in 10, 12, and 20 gauges.

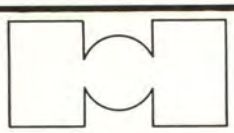
"Flite-Max" Wads

"Flite-Max" Wads. Combination plastic and fiber wads available in 12 gauge only. They offer the advantage of a shot sleeve. Size numbers 1, 4, and 5 were used. Normally packed 250 to a box.

ALCAN WADS (Continued)

"Feltan-Bluestreak" Wads

"Feltan-Bluestreak" Wads. Filler wads used in 10, 12, and 20 gauges. The 1/4″ and 3/8″ sizes were used in all three noted gauges. The 5/16″ and 1/2″ sizes were used in 12 gauge only.



Kwik-Sert Wads

Kwik-Sert Wads. Polyethylene shot strips designed as a shot sleeve for use with conventional wadding. Used in both 12 and 20 gauges.

WINCHESTER WADS

Card Wads

Card Wads. Cardboard wads designed primarily as an over powder wad although in some instances they are used as a filler wad. The .080″ and .135″ sizes were used in 20 gauge. The .200″ size was used in 12 gauge. Normally packed 1,000 to a box.

Plastic Cup Wads

Plastic Cup Wads. Over powder wads available only in 12 gauge. The cup side should be placed towards the powder. They must be seated individually and visually inspected to insure that they have seated without twisting or distorting.

Molded Fiber Wads

Molded Fiber Wads. Edge lubricated wads used exclusively as a filler wad in 12, 16 and 20 gauges. Sizes used included 1/4″, 3/8″, and 1/2″. Normally packed 500 to a box.

WINCHESTER WADS (Continued)

"AA" Wads

"AA" Wads. Double plastic wads used in 12 and 20 gauge. They offer the advantages of a one-piece wad column and extended case life. Numbers WAA12 (12 Ga.) and WAA20 (20 Ga.) are white in color, while the WAA12R (12 Ga.) are red in color. Normally packed 250 to a bag.

FEDERAL WADS

Card Wads

Card Wads. The .135″ size was used in 12 gauge as an over powder wad. Normally packed 100 to a carton.

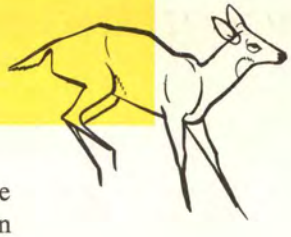
Fiber Wads

Fiber Wads. The 3/8″ and 1/2″ sizes were used as filler wads in 12 gauges. The 1/4″ size was used as a filler wad in both 12 and 16 gauges.

Champion Pellet

Champion Pellet Protector Wads. Plastic one-piece wad columns in 7/8″ size used in 12 gauge only. They offer the advantage of extended case life.

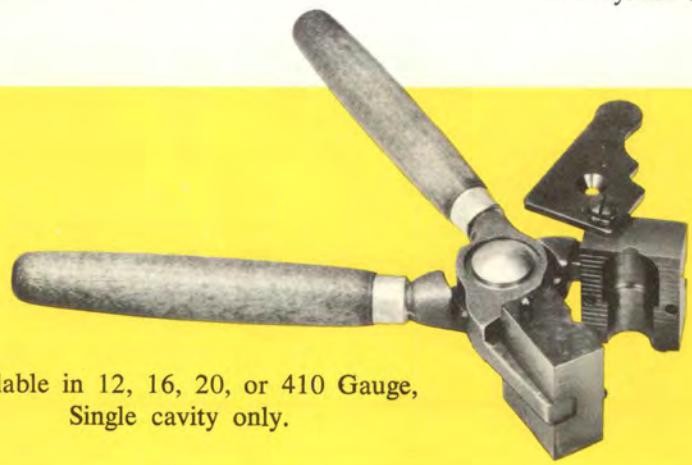
SHOTGUN SLUGS



MUST THEY BE RIFLED?

For many years it was believed that the rifling grooves cut in the body of a shotgun slug helped to stabilize the projectile and improve accuracy. More recent test results indicate that slugs are not rotated by these rifling grooves, but rather travel in the same manner as a dart, or shuttle-cock. They remain head on only because the greater weight mass is in the front of the projectile.

Lyman slug moulds are available for 12, 16, 20 or 410 gauge slugs. These moulds cast perfect hollow-base slugs. Cast slugs do not require rifling and are recommended to be shot as cast. See Lyman catalog for full particulars.



Available in 12, 16, 20, or 410 Gauge, Single cavity only.

BUCKSHOT MOULD

Lyman round ball moulds are available in diameters which correspond to standard factory buckshot sizes. The listing on the right shows the diameter mould required to cast the various sizes of buckshot.

Shot Size	Mould Dia.	Approx. Weight
000 Buck	.360	72 grs.
00 Buck	.330	54 grs.
0 Buck	.319	47 grs.
#1 Buck	.300	40 grs.
#3 Buck	.244	23 grs.
#4 Buck	.235	20 grs.

A FREE 44 PAGE LYMAN CATALOG IS YOUR'S FOR THE ASKING . . . SIMPLY FILL OUT AND MAIL THE CARD WHICH IS BOUND INSIDE THE BACK COVER OF THIS HANDBOOK.

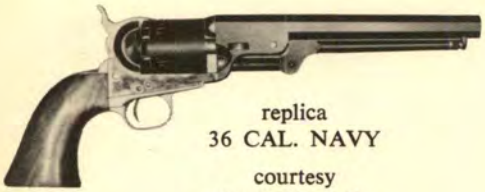
Loading the Muzzle Loader

This chapter of the Handbook concerns itself with the use of modern replica firearms. The rifles, pistols and shotguns illustrated herein are currently available. They represent a few of the most popular models. For more information about them write directly to the manufacturers listed on the reverse side of this divider.

FINDING A GUN TO SHOOT

replica
KENTUCKY PISTOL

courtesy
Navy Arms Co.
Ridgefield, N.J.



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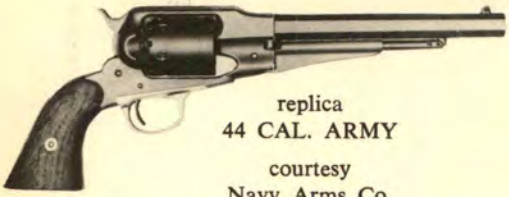
36 CAL. NAVY

courtesy
Navy Arms Co.
Ridgefield, N.J.



replica
44 CAL. ARMY

courtesy
Navy Arms Co.
Ridgefield, N.J.

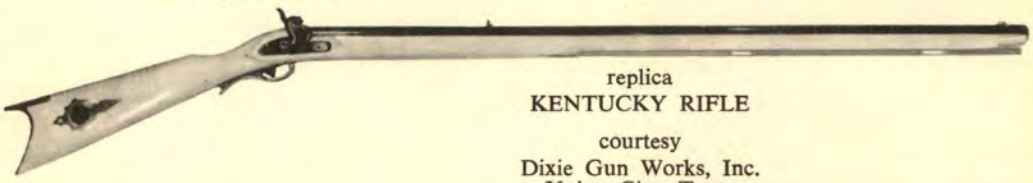
Only a few years ago it was difficult to locate a shootable muzzle loader. If you did manage to dig one up, it brought top collectors' prices. And why not? Old guns like old furniture, old cars, or old anything have become rare collectors' items. From a shooting standpoint, these old museum pieces were a luxury to own and it was not too practical to put them back into harness. The parts had become brittle with age and broke easily. If you broke a hammer or lock spring, you destroyed much of the gun's value.

When we talk of shooting a muzzle loader today, we are not necessarily referring to the antiques of yesteryear. Many fine guns, exact reproductions of famous old models, are now being made. As these replicas are readily available at reasonable cost, a whole new world of muzzle loading enjoyment has been opened up to us. Today you can buy a brand new muzzle loading rifle, pistol or shotgun from any one of several manufacturers.

This chapter of the Handbook concerns itself with the use of modern replica firearms. The rifles, pistols and shotguns illustrated herein are currently available. They represent a few of the most popular models. For more information about them write directly to the makers listed below. They will be happy to supply literature.

Navy Arms Company
Ridgefield, New Jersey

Dixie Gun Works, Inc.
Union City, Tennessee



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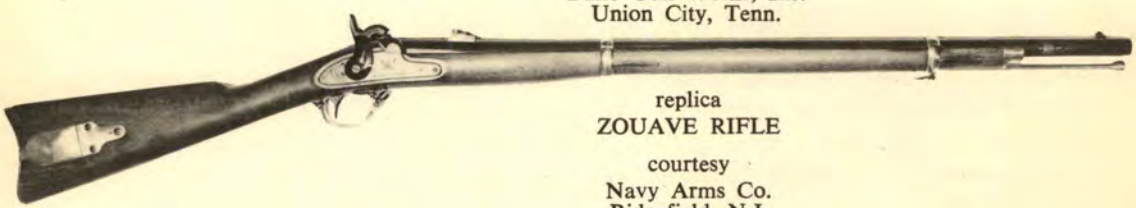
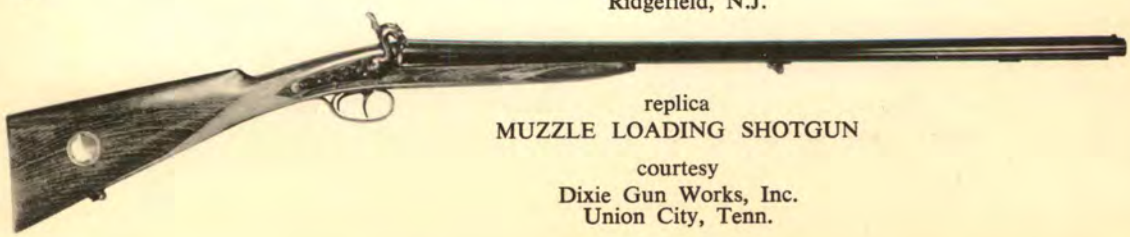
KENTUCKY RIFLE

courtesy
Dixie Gun Works, Inc.
Union City, Tenn.



replica
ZOUAVE RIFLE

courtesy
Navy Arms Co.
Ridgefield, N.J.



replica
MUZZLE LOADING SHOTGUN

courtesy
Dixie Gun Works, Inc.
Union City, Tenn.

THINGS YOU SHOULD KNOW ABOUT BLACK POWDER

Black powder is the only powder that should ever be used in a muzzle loading firearm. Even today's replicas with their modern steel barrels are not designed for the high pressures of smokeless powders. However, black powder, if improperly handled, can be dangerous. So take care. Further information can be found in the Powder Chapter of this Handbook.

For small arms use — rifle, pistol, shotgun — four specific types of black powder are available. The differences between them are in the size of the grains (granulations). The smaller the granulation, the faster the powder burns. In general, the burning rate of the powder determines its use. A system of marking — a series of the letter "F" — has been used for many years to identify the granulation size of various powders. For example, FFFFG is made with the smallest granulation and it is, therefore, the fastest burning of all black powders. FFFFG is used for priming flint locks which require an extremely fast burning powder.

The following chart is offered as a rule of thumb to help you understand better the various uses of black powder. Do not feel that you must adhere exactly to the chart. It is intended simply as a guide to show approximate applications.

FFFFG	—	For priming flint locks.
FFFG	—	For rifles up to and including 40 caliber. Also for most single shot pistols and all percussion revolvers.
FFG	—	For rifles over 40 caliber and up to 58 caliber. Also for large caliber, single shot pistols and most shotguns.
FG	—	For rifles over 58 caliber and large bore shotguns.

Further on in this chapter we have listed the recommended loads for each of the replica arms covered. For these loads we chose the type of powder which gave us the best results. In general, round balls require more poowder to drive them than do conical bullets. An old rule of thumb for round ball rifles is to use a powder charge equivalent to one-third of the ball weight. A rifle (not shotgun or pistol) is loaded until it makes a sharp "crack" sound when fired. The cracking noise is an indication that the proper velocity has been reached. Some shooters have a tendency to overload a muzzle loading rifle. Don't. There is nothing to be gained by using too much powder. Whatever powder is not burned in the barrel will be blown out the muzzle. To find out quickly whether you are using too much powder, fire the rifle from a prone position with several sheets of newspaper spread on the ground in front of the muzzle. If telltale signs of unburned powder appear on the paper, reduce your charge.

THINGS TO KNOW ABOUT PATCH AND BALL FIT

Muzzle loading guns have a way of being cantankerous when it comes to ball and patch fit. They require a few kind words and a little coaxing before they begin to live up to

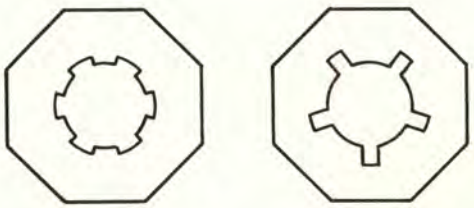
granddad's stories. In order to spare you the guess work and cussing that's required to put a load together, we have tested and listed suggested loads for each of the replica guns shown. These charges, ball diameters and patch thicknesses were found to be accurate in our tests. A newcomer to the sport, however, still requires a knowledge of why a patch is used in a muzzle loading gun and why it is important that this patch fits tightly.

Accuracy with a muzzle loader is based on a paradox: an undersized ball is spun by rifling that it never touches! The secret, of course, lies in the cloth patch. It transfers to the ball the grip and spin of the rifling. It also fills the grooves and acts as a gas check by sealing off the hot gases. Theoretically, any closely woven, tough material that will stand the abuse of being shot out of a rifle is satisfactory for patching. The thickness of this material is something else again. It must be matched carefully to the diameter of the ball.

The thickness of the patch relates directly to the depth of the rifling. The size of the ball, on the other hand, is related to the bore diameter of the rifle. A combination of both of these factors must be carefully considered and regulated for optimum efficiency. As the patch thickness is increased, the ball diameter must be decreased to compensate for the added material between the ball and the lands.

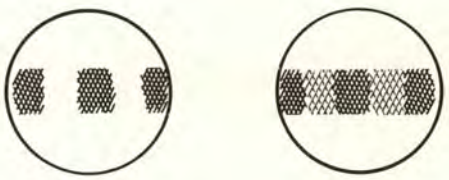
To perform its duties as a gas seal the patch must completely fill the grooves of the rifle. In other words, it must be under considerable compression not only where it contacts the lands, but also at the bottom of each groove. A good deal of cloth must be packed into each groove. Naturally, this can't be carried to an extreme, or a sledge hammer would be needed to load the rifle.

These drawings represent two types of rifling. Although both examples have the same bore diameter, they do not use the same ball and patch combination. The one on the right requires a much thicker patch to fill the deep grooves. Therefore, a smaller ball must also be used to compensate for the tighter fit at the lands.

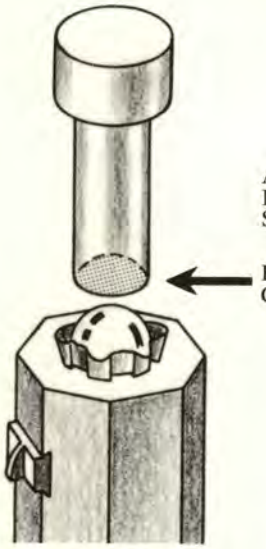


shallow groves deep grooves

When a correctly patched roundball is driven through a barrel, it will show cloth marks completely around its circumference, like the ball on the right. These marks will be light where the ball and patch touched the grooves and heavy where they touched the lands.



incorrect correct



Although a tight fitting combination of patch and ball is the secret to accuracy with a muzzle loader, some compromise must be reached between loadability and complete bore sealing. You must be able to start the ball into the muzzle and seat it on the powder without excessive battering or flattening of the projectile. To shoot well the front of the ball must remain round. The proper loading implements are important here and a Short Starter, as shown in the illustration, can be made easily from a piece of hard wood. The end of the starter should be hollowed out to fit the contour of the ball. One sharp blow on the starter with your hand, or sometimes a mallet starts the ball.

Recovering fired patches gives you a good clue as to the effectiveness of your patching material. They will usually be found five to ten yards in front of the muzzle. The following illustration tells you how to read patch signs.

___ POOR Patch much too thin to seal the bore. Center is burned out by gas blow-by.

___ POOR Patch too thin to seal the bore. Overall blackening still indicates gas blow-by.

___ GOOD Patch fits tightly and seals well. Blackened cross mark indicates effective sealing off of gas.

THINGS TO KNOW ABOUT BULLET MOULDS

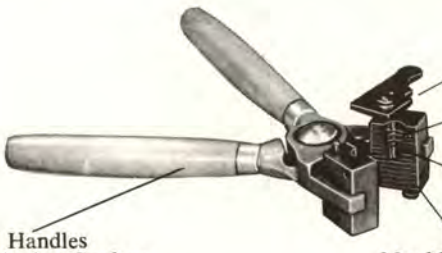
Some of the earliest American bullet moulds were made rather crudely of soap stone, with a cavity worked into them by hand. Later on, somewhat superior moulds were made of iron or bronze. Even these, however, lacked certain refinements essential to good bullet casting. One of the notable deficiencies in the old moulds was that the handles were not sheathed in wood. Consequently, after casting a few bullets, the operator needed asbestos covered hands. Many early moulds didn't even have a sprue cutter so the rifleman had to cut off the sprue with his hunting knife. This, of course, made consistency difficult, and accuracy suffered accordingly.

The chief deficiency in antique mould design is the lack of provision for bleeding off the air that becomes trapped in the mould. Because the air cannot escape, it forms a bubble, or air pocket, within the bullet. Such bullets may appear perfectly normal on the surface,

but they are too unbalanced, ballistically, to group accurately. Air pockets can be detected by weighing the bullets on a conventional reloading scale. Those that do not come up to a consistent weight can then be melted down and recast.

Suggested Lyman mould sizes (for the replica guns illustrated) are listed later on in this chapter. These moulds offer all the modern features required for casting truly good bullets and round balls. For more information on bullet moulds and casting techniques, see "Accuracy with Cast Bullets" in the Reference Section of this Handbook.

LYMAN MOULDS ARE AVAILABLE FOR 75 DIFFERENT ROUND BALL DIAMETERS AND 800 DIFFERENT BULLET STYLES AND WEIGHTS



CLEANING YOUR MUZZLE LOADER

As black powder is highly corrosive, your gun must be carefully cleaned each time it is used. The best solvent for black powder residue is still hot soapy water. It is important that the water be boiling hot. This not only does a better job of removing powder fouling, it also heats up the barrel metal. A hot barrel will dry itself off rapidly without rusting. Use a bar type soap (not detergent) and cut up small chips of soap, stirring them into the water.

If the gun is a break down type, like the revolver or shotgun, disassemble the piece and scrub the barrel well. Also the cylinder if it is a revolver. A good way to clean barrels of the shotgun type is to submerge the breech end in the water and pump the cleaning rod up and down in the barrel. This will draw the water in and flush it out through the nipple holes. When the barrels are clean, set them aside and allow the heat in the metal to dry itself off. Fouling on the metal parts of the action should be wiped clean with an oily cloth. When the barrel drys, oil it well (inside and out) and reassemble the gun.

Some guns such as the Kentucky rifle, should not be disassembled for cleaning. As their barrels are held on by wood screws and pins, constant disassembling would soon destroy them. The method generally used for cleaning guns of this type is to close the hammer on a piece of cloth, fill the barrel half-full of hot soapy water, cork up the muzzle and shake the rifle up and down. Now, cock the hammer and hold the rifle with the nipple toward the ground. As you run the patch down the barrel, the water will pump out through the nipple. Repeat the action until the patches come out clean. Set the gun aside until the barrel heat drys it off, then oil it well (inside and out). Fouling on the locks should be wiped clean with an oily cloth. Before using your muzzle loader wipe the bore clean.

LOADING THE PERCUSSION REVOLVER

Of the various percussion revolvers used during the Civil War, original versions of the two shown here, the 36 caliber Colt Navy and the 44 caliber Remington Army, were among the more famous. Later, when the war ended, many of these same pistols saw service along the western frontier. At that time when the country was young and wild, each man was expected to enforce his own law with a pair of "Six Shooters". A brace of these Colt Navies, or Remington 44's, did indeed carry weight.

REPLICA OF
36 CALIBER COLT NAVY
Courtesy Navy Arms Company

REPLICA OF
44 CALIBER
REMINGTON ARMY
Courtesy Navy Arms Company

.36 CAL. NAVY — SUGGESTED LOADS (#11 Alcan Caps)

* 	.375 ROUND BALL	25 grs. FFFG DuPont black powder (Vel. 1005 F.P.S.)
	BULLET #37583 145 Grs.	15 grs. FFFG DuPont black powder (Vel. 690 F.P.S.) Bullets must be sized from .001" to .002" over chamber diameter and lubricated (Lyman bullet lubricant).

.44 CAL. ARMY — SUGGESTED LOADS (#11 Alcan Caps)

* 	.451 ROUND BALL	39 grs. FFFG DuPont black powder (Vel. 995 F.P.S.)
	BULLET #450229 155 Grs.	26 grs. FFFG DuPont black powder (Vel. 815 F.P.S.) Bullets must be sized from .001" to .002" over chamber diameter and lubricated (Lyman bullet lubricant).

*MOST ACCURATE

1. Pour a measured amount of powder into each chamber.

Before you actually load your revolver it is wise to fire a percussion cap on each of the six nipples. This will remove any oil that may have accumulated in the nipples or chambers and insure ignition. After this is done, set the hammer of your pistol on the half-cock position and commence loading. Pour a measured amount of powder into each chamber and place a ball, or bullet, over the powder in the mouth of one of the chambers. DO NOT USE A PATCH. If you are loading a round ball, be sure that the sprue mark is up and carefully centered in the chamber. If you are using a conical bullet, even more care must be taken to make sure that the bullet is straight in line with the chamber.

2. Pull down on the loading lever to seat the projectile.

3. Fill the remainder of each chamber with heavy grease.

4. Place a percussion cap on each of the six nipples.

Carefully rotate the cylinder until the projectile is directly in line with the loading ram. Pull down on the loading lever and seat the projectile friction tight against the powder. As you load all six chambers, try to be consistent in applying the same seating pressure to each projectile. The next step is to fill the remainder of each chamber with a sufficiently heavy grease. This acts as a bullet lubricant and keeps bore fouling to a minimum. Lastly, you must prime the pistol by placing a percussion cap on each of the six nipples — and you're ready to fire. Before the gun is holstered the hammer is carefully let down and rested, not on the percussion cap, but on the raised portion of the cylinder between the nipples.

MISFIRES AND HANGFIRES

Although misfires seldom occur with modern cartridge weapons, they are quite common to muzzle loading arms. Several things can cause a misfire or hangfire: (1) Powder fouling can build up and close off the hole in the nipple. (2) Oil in the chamber might have dampened the powder charge. (3) Poor contact between the hammer and nipple might not set off the cap. (4) Poor quality percussion caps may not fire when struck by the hammer.

The best way to avoid misfires is to keep your gun clean and the nipples in good condition. Don't snap the hammer unless a cap is in place and use only good grade percussion caps.

If you should have a misfire, wait at least one full minute before you rotate the cylinder to reprime the nipple. A piece of thin copper wire is handy for cleaning the flash hole.

MULTI-IGNITION

Yes, it has happened and it can happen again. Percussion revolvers have been known to fire several chambers simultaneously. Oddly enough the results never seem to be as disastrous as you might think. Nevertheless, no matter how good your nerves are, it is best to take precautions. A tight fitting ball topped off with grease eliminates any chance of cross ignition in the front of the chamber. If your nipples are in good condition, and if you use the correct size percussion caps, cross ignition is unlikely at the back of the cylinder. One extra precaution is to smear a little Vaseline over and around the caps after they have been placed on nipples.

LOADING THE .58 RIFLED MUSKET

The original model of this rifle, the Remington Zouave Model 1863, saw service in the Civil War. Most experts still consider it one of the most accurate military percussion rifles ever produced. In the hands of many a civil war veteran, it helped to open the west by furnishing necessary food and protection.

REPLICA OF
REMINGTON ZOUAVE MODEL 1863
Courtesy Navy Arms Company

.58 CAL. MUSKET — SUGGESTED LOADS (Alcan 4 — Wing Musket Cap)

* 	MINNIE 575213 505 Grs.	60 grs. FFG DuPont black powder (Vel. 1005 F.P.S.) Bullets are not patched, but must be lubricated (Lyman Bullet Lubricant).
	.562 ROUND BALL	65 grs. FFG DuPont black powder (Vel. 1215 F.P.S.) Use .013 patch (linen if possible).

*MOST ACCURATE

Before actually loading the rifle, snap one or two caps on the nipple. This will insure ignition by clearing the nipple and vent of any oil that may have accumulated. Leave the hammer down on a spent cap and you are ready to start your loading. Keep the muzzle away from your body and expose as little of your hand as possible over the muzzle while loading.

Pour a measured amount of powder down the muzzle and hit the side of the barrel a few sharp raps with the heel of your hand. This will settle the powder in the barrel. Start the Minie ball (skirt down) into the muzzle with your fingers. Next, use your ramrod to push the bullet down tight against the powder. Remove the ramrod and cap your piece. You are now ready to fire.

MISFIRES AND HANGFIRES

If your rifle should ever fail to fire, be careful. Hold the muzzle down range and treat it as if it might go off at any minute . . . it could! After a few seconds reprime the nipple and try it again. A piece of thin copper wire is a handy tool for cleaning powder fouling from the nipple hole.

LOADING THE KENTUCKY PISTOL

A very few flint lock pistols of this design were made by the early riflesmiths of Pennsylvania. As they were not turned out in any great quantity, original Kentucky Pistols are exceptionally rare collector items today. The replica pistol illustrated here is available with either a flint or a percussion lock. Flint locks are, of course, more representative of the originals, but it would not be too unlikely to find even an original pistol that had been converted to percussion.

In as much as the loading procedure for the Kentucky pistol is essentially the same as that for the Kentucky rifle, we have included much of this information with the rifle section. We ask that you also read the following pages covering the Kentucky rifle. Loads for the pistols are considerably lighter than those for the rifles. For best accuracy with the pistol use only enough powder to get the ball to the target.

REPLICA OF
KENTUCKY PISTOL
Courtesy Navy Arms Co.

.44 CAL. KENTUCKY PISTOL — SUGGESTED LOADS

*  .424 ROUND BALL

#11 Alcan caps for percussions.

For flint locks fill pan cavity with FFFFG or FFFG.

40 grs. FFFG DuPont black powder (1050 F.P.S.) Use .013" patch (linen if possible). Start with the above charge and work downward. Best accuracy for your individual pistol will be somewhere below this charge. Our patch was spit lubricated.

*Best accuracy for individual pistol will require adjustment of charge.

LOADING THE KENTUCKY RIFLE

As distinctively American as corn bread or Daniel Boone, these rifles were made in Pennsylvania by German and Swiss riflesmiths who settled the region as early as 1710. The name "Kentucky" was given to the weapon because of its popularity in the then unsettled wilderness of Kentucky and Tennessee. The complete development of the Kentucky rifle was slow. It required almost a hundred years of evolution and changes before its design developed into the long flowing beauty that we recognize so readily today.

The replica rifle illustrated here is available with either a flint or a percussion lock. Although the early originals were all flint locks, many were converted to percussion over the passing years.

REPLICA OF
KENTUCKY RIFLE
Courtesy Dixie Gun Works, Inc.

.40 CAL. KENTUCKY RIFLE — SUGGESTED LOAD

* .395
ROUND BALL

#11 Alcan caps for percussions.

For flint locks fill pan cavity with FFFFG or FFFG.

40 grs. FFFG DuPont black powder (Vel. 1745 F.P.S.) Use .013 patch (linen if possible) and spit lubricated. With our test rifle, this load shot one hole groups at 50 yards.

*SUPERB ACCURACY

Before actually loading your rifle, snap one or two caps on the nipple. If your rifle has a flint lock, strike a pan of powder with the bore unloaded. This will insure ignition by clearing away any oil that may have accumulated in the drum or vent. Set your rifle on its butt stock and hold the muzzle away from face and body. Pour the measured amount of powder down the muzzle and hit the side of the barrel a few sharp raps with the heel of your hand. This will settle the powder in the barrel.

Select a piece of patching, wet it well on your tongue and place it over the muzzle. Lay a ball on the patching. Uniformity is important and you should make certain that the grain of the patch is always in the same direction. Also, be sure that the sprue mark on the ball is up and centered in the bore. Start the ball (flush with the muzzle) by using your short starter. Now, with a sharp knife, or old-fashioned straight razor, cut off the excess patching material. The ball should now be flush with the muzzle and encased in a neat circular patch of cloth. If the ball is tight, a long starter should be used to drive the ball about four inches down the barrel.

Complete the job by using the ramrod to push the ball the rest of the way to the powder. Seat the ball firmly against the powder, but do not pound the ball or crush the powder in the process. Once the ball is loaded, it is wise to mark your ramrod at the muzzle. This will give you a reference mark for future loading.

The last thing you do is prime the piece. If your rifle is a cap lock, place a cap on the nipple and press it all the way down for uniform ignition. If your rifle is a flint lock, open the frizzen and pour a small amount of priming powder (FFFFG) into the pan. Close the frizzen and she's ready to go.

MISFIRES AND HANGFIRES

If your rifle should ever fail to fire, be careful. Hold the muzzle down range and treat it as if it might go off at any minute. After a few seconds, reprime the gun and try it again. A piece of fine copper wire is a handy tool for cleaning powder fouling from the nipple. It is handy, too, to pick a few grains of fresh powder into the drum or frizzen, if the rifle doesn't fire.

LOADING THE MUZZLE LOADING SHOTGUN

In granddad's day a shotgun was not considered a piece of luxury sporting equipment. His old scattergun was a basic household tool that had the vital function of putting "meat in the pot". Many of the original guns still bear signs that attest to the hard use to which they were put over the years. Their hammers and lock parts have been repaired or replaced, and their ancient barrels have been worn thin from countless firings.

When firing a muzzle loading shotgun for the first time, most shooters are surprised to learn that granddad really wasn't handicapped by his old smooth-bore. Many of these old guns are nicely put together and you have only to shoot them to appreciate their superb balance and handling speed. For a hunter who wants maximum sport at a minimum cost, a replica of these old coal burners just can't be beat.

REPLICA OF
MUZZLE LOADING SHOTGUN
Courtesy Dixie Gun Works, Inc.

20 GA. SHOTGUN — SUGGESTED LOAD (Alcan #11 Caps)

CHARGE — 2-1/2 drams FFG black powder
FILLER WADS — 2 Rem. 3/8" 20 ga. felt wads
SHOT — 1 ounce #9
OVER SHOT WAD — 1 Rem. 3/16" 20 ga. felt wad
(Vel. 1050 F.P.S. — pattern good

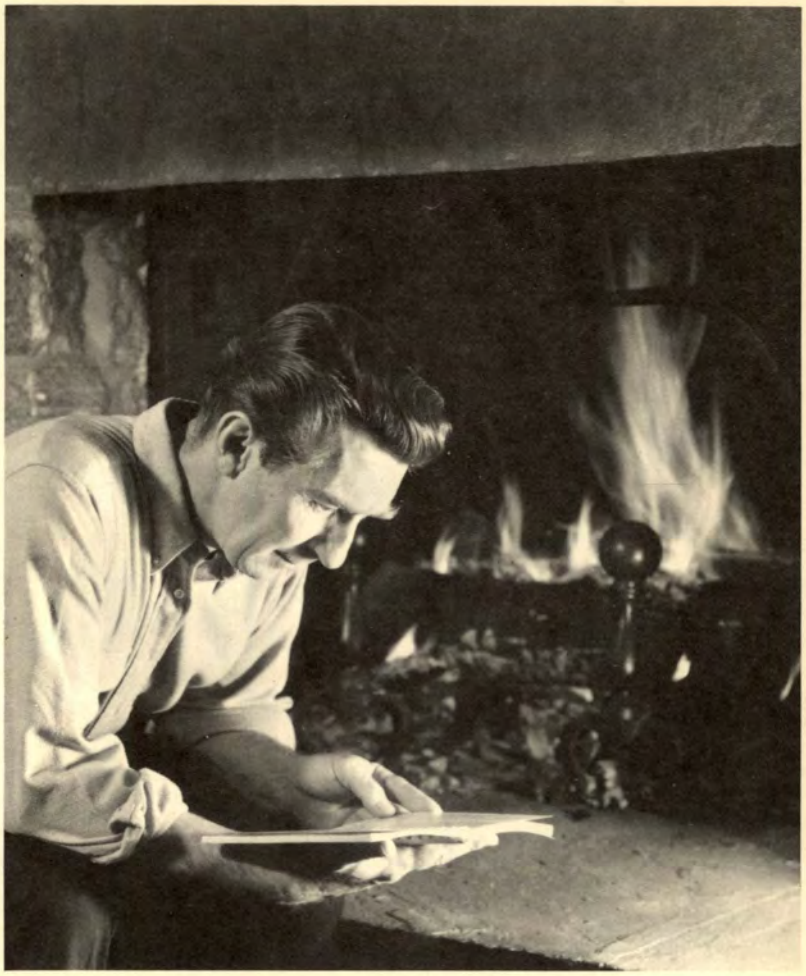
LOADING AND CARE OF THE MUZZLE LOADING SHOTGUN

Loading the muzzle loading shotgun is simple, for the proportions are equal measures of powder and shot. The Lyman adjustable shot dipper serves as a measure for both powder and shot. For wads, the shooter may purchase any standard commercial type. He may also cut his own wads from available material with a Lyman wad cutter.

Over powder and over shot wads can be cut easily from any hard cardboard. Filler wads must be thicker and softer and a suitable material is somewhat harder to come by. Solitex board works, but it is perhaps more desirable to purchase your filler wads.

Before loading your gun, snap several caps to clean the oil from the nipples. Leave both hammers down on two of the spent caps and begin loading. Pour into each barrel a measured amount of powder, then push the over powder wad down firmly on the powder. On top of this, load the filler wad into each barrel and pour in the measured shot charge. The shot charge is covered with an over shot wad to keep it from rolling out the barrel. To insure against it upsetting under recoil, the over shot wad should fit tightly. Lastly, prime your piece by placing both hammers on half-cock and a cap on each nipple. That's it! She's ready to shoot.

CAUTION: If only one barrel is fired and it is desired to reload, the cap should always be removed from the charged barrel.



Reference Section

This section contains the following chapters:

- **PRESSURE**
- **POWDERS**
- **CASES**
- **PRIMERS**
- **BULLETS**
- **ACCURACY WITH JACKETED BULLETS**
- **ACCURACY WITH CAST BULLETS**
- **UNDERSTANDING VELOCITIES**
- **RELOADING ACCESSORIES**
- **GLOSSARY OF TERMS**

We strongly urge you to read these chapters carefully and familiarize yourself completely with their contents. Periodic rereading will allow you to commit much of this information to memory, and assure you a sound, safe knowledge of the subject.

Our very special thanks to those people who through their cooperation, interest and encouragement helped immeasurably in producing this Handbook.

THE LYMAN GUN SIGHT CORPORATION

PRESSURE

The format and cross reference of this Handbook is designed to accomplish certain objectives. One of the most important of these is to direct your attention to this chapter on Pressure. We urge you to read it carefully and to follow our recommendations when working with maximum loads.

Some reloaders who might otherwise be considered "safe and sane", open a reloading manual, hastily select a load marked "Maximum Velocity", then throw the indicated powder charge into a primed case, seat a bullet and fire away. This is not the right way . . . it is the **dangerous** way!

Although the mechanical procedure for reloading is relatively simple, learning the difference between the right way and the wrong way requires some homework. To enjoy this hobby, you must learn the rules . . . know the limits within which to stay for safety. Therefore, a basic knowledge of pressures is necessary.

WHAT IS PRESSURE?

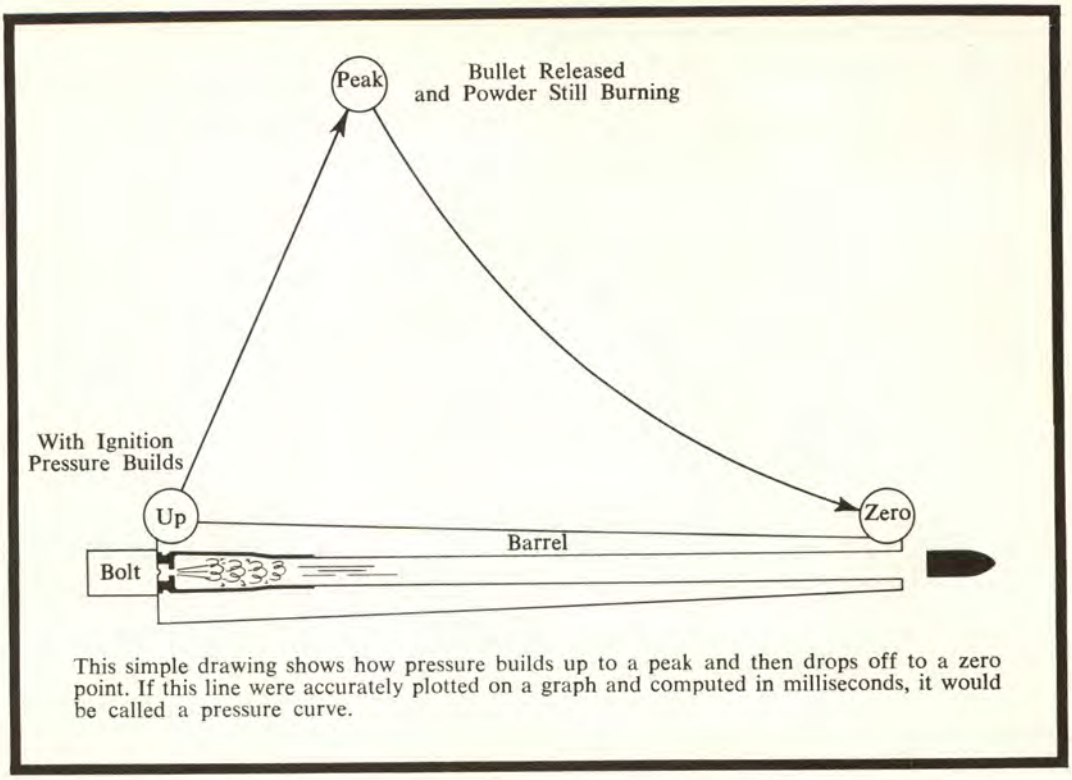
Let's not begin by assuming that all pressures are dangerous. Of course, they are not. Pressure is the power that drives the bullet down the barrel and out to the target. Without a considerable amount of controlled pressure, the cartridge would not function.

Neither should it be assumed that all high pressures, even safe ones, are desirable. The hottest load is rarely the most accurate one, and high pressures do shorten barrel and case life. Pressure, therefore, is something that can be manipulated, but we must first understand what we are trying to accomplish.

Pressure in the cartridge case begins with the primer flash. The powder upon ignition rapidly generates an enormous amount of gas creating pressure in all directions. It presses against the case head and drives the cartridge back against the bolt. It forces the case walls out tight against the sides of the chamber. It pushes forward on the bullet base.

Naturally, as the pressure builds, the gas seeks to escape the confines of the case. The case head and walls, being supported by the bolt and chamber, refuse to budge. This leaves only one direction for the gas to exit. So it forces the bullet out of the case and drives it with increasing speed down the barrel.

From the time of ignition, and before there has been time for any appreciable bullet movement, the peak pressure has been reached. After this, a gradual decrease in pressure takes place until the bullet emerges from the muzzle. At this point, the pressure returns quickly to zero. This sequence of events takes place in an extremely short period of time. What concerns the reloader, is just how **high** this pressure climbs, and how **safely** it is controlled during firing.



This simple drawing shows how pressure builds up to a peak and then drops off to a zero point. If this line were accurately plotted on a graph and computed in milliseconds, it would be called a pressure curve.

If all a reloader had to be concerned about was the amount of powder to pour into a case in order to obtain a given peak of pressure, it would all be quite simple. Unfortunately, it's not that easy. Although the powder charge creates the pressure in the cartridge, other factors such as the primer, bullet weight, bullet hardness, bore size, etc., will alter the height, shape and location of the pressure peak. These factors, collectively or individually, can raise pressures considerably, and even carry them into a danger zone. For example, the maximum charges listed in this Handbook could, if they were affected by the wrong set of circumstances, produce unsafe pressures in your particular rifle. As you study this chapter, you will see how all this is taken into account when working out maximum charges. At this time, however, let's just remember that less powder does not always mean less pressure. In some rifles, and under certain conditions, the same maximum pressure can be attained with far less powder than the maximum charge.

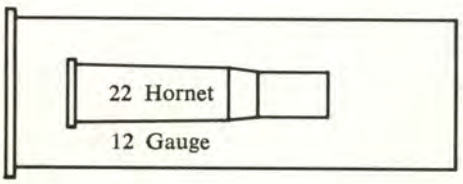
WORKING PRESSURE

Simply stated, working pressure represents the strength of your cartridge case. All factory loaded cartridges for rifles, handguns, and shotguns are loaded to operate within a specific pressure range. This is known as the "Maximum Working Pressure" for a particular cartridge. Depending on the design requirements of the individual cartridge, working pressures will vary. For example, the 300 H & H Magnum has a higher working pressure than, say, the 30/30, and pressures for the 44 Magnum are higher than those of a 38 special.

The working pressures of a cartridge is usually expressed in terms of thousands of pounds **per square inch**. This means that the cartridge case, when properly chambered in

a firearm designed for it, will under normal circumstances, safely control pressures up to its rated pounds per square inch. The reloader should remember, however, that these pressure figures established under controlled conditions can only be safely duplicated using guns and cases that are mechanically sound. They cannot be safely duplicated in guns with poor chambers, or with any old cartridge case.

The maximum working pressure is dictated to some extent by the size of the gun chamber. All other conditions being equal, a small chamber will withstand a higher pressure than a large one, simply because there is less area (fewer sq. inches) for pressure to work against. A 12 gauge shotshell, for example, may have a working pressure of only 11,000 pounds P.S.I., but it has a far greater case area than, say, a 22 Hornet case with its 43,000 pounds P.S.I.



Safe working pressure depends on both the strength of the case and the strength of the rifle. A cartridge such as the 300 H & H Magnum, uses a very heavy walled case which enables it to withstand pressures up to as high as 55,000 pounds P.S.I.

Rifles for these cartridges are built with very strong bolt actions of heat treated alloy steel. The 30/30 cartridge, however, might be viewed as the opposite extreme. Although these rather thin walled cases have been beefed up somewhat over the years to increase the safety factor, they still must be restricted to a more moderate pressure of under 40,000 pounds P.S.I. This is due to the weaker design of the various guns which are chambered for this cartridge.

Every rifle and cartridge combination fits somewhere in the overall picture of maximum working pressure. The reloader, because he is not certain of where he stands in relation to his maximum pressure, should work slowly. He should begin with a safe starting load and work carefully upwards to establish the maximum charge for his particular rifle and case combination. All of the maximum charges listed in this Handbook have been tested and fired by our technicians. They were found to be maximum in our rifles and under our conditions. Under no circumstances should the reloader exceed these loads, nor should he quickly accept them as **his** maximum.

CONTROLLED PRESSURE

The average reloader does not have access to elaborate pressure testing equipment. To determine his area of safe pressure, he must work with a reloading manual and a good bit of common sense. As he gains in knowledge from both study and experience, he applies it directly to his loading conditions, and he works up good, safe, accurate loads for his particular firearm. These might not be the hottest loads possible. In most cases, if we're concerned with accuracy and barrel life, these loads will probably remain a little on the mild side.

In working up to your maximum load, it is recommended that you follow this procedure:

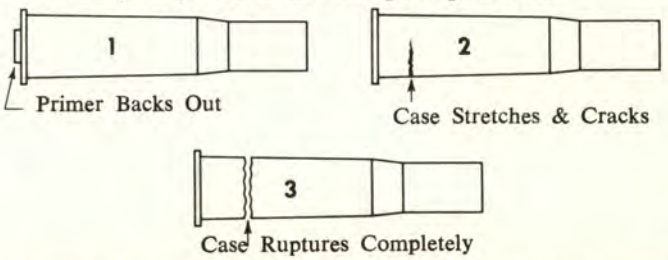
1. Begin with the suggested starting load listed in this Handbook. Do not start with the maximum.
2. Weigh all your loads on a powder scale. Do not use a powder measure until after you have firmly established the safety of your load.
3. Increase your charges in gradual increments: ½ grain at a time for charges over 25 grains; 1/10 grain for charges under 25 grains.
4. Fire no less than five rounds each time you increase your charge.
5. Use only new or once fired cases when working up a load and be fussy with them. Inspect your cases thoroughly after each firing.
6. Wipe all the sizing lubricant off your cases before firing. The presence of lubricant will cause excessive thrust on the bolt face.
7. Never mix brands of individual components. If you change a primer brand, case brand, bullet, etc., start all over again. You probably have changed your pressure.
8. Do not exceed the maximum listed load.
9. Always wear a good pair of shooting glasses when firing test loads.

The remainder of this chapter covers the various factors that can alter your chamber pressure. It will also enable you to recognize signs of excess pressure. Study the text carefully, as you must be able to recognize and interpret the signs before you can work in a maximum pressure area. If you should encounter definite signs of excess pressure . . . reduce your powder charge immediately . . . a full 10 percent. If you have indefinite indications of excess pressure, do not go higher until you determine exactly what is causing the problem. If you have difficulty finding the solution to a problem, write to us. We will be happy to offer our assistance.

HEADSPACE

To withstand normal chamber pressure, the head of your cartridge case must be firmly supported by the bolt face and chamber wall. Without this support, the brass case stretches beyond its normal limits. The case will then rupture and free hot powder gas into the action of the rifle. When excessive headspace is present, the bolt does not support the case head.

While excessive headspace will not boost the pressure in your chamber, it will destroy your rifle's ability to handle even moderate pressure. As reloaders, we must first assure ourselves that our rifle is completely free from headspace problems.



The above illustrations are indications of excessive headspace. Do not use any firearm which shows such signs of headspace problems.

At low pressure (the starting load) the first sign of excessive headspace is usually the backing out of primers. As the pressure of the load increases, the case stretches to the point of cracking around its circumference. This stretching is sometimes so severe that the entire head of the case separates from the case body allowing the gas to flow back through the action.

Check your present cases for primer back-out and for cracks and splits. If your cases do not show signs of excessive headspace with the loads you are using, you may assume that your rifle is headspaced correctly. If these signs do appear at any time, see a competent gunsmith. Have him check your rifle and your reloading dies. A poor sizing die which shortens the shoulder of the case, can also cause the same problems as excessive headspace in your rifle.

CONDITIONS WHICH CAN RAISE PRESSURE

POWDER

Adding more powder to the case will obviously create higher pressure. Reduced charges may also boost pressure if the powder is not compatible with the load (see Detonation). Fast burning powders create higher pressures than slow burning powders when used in equal amounts (see Powder chapter). You must select the type of powder designed for your purposes. The powders shown in this Handbook were carefully chosen for the calibers and loads listed.

DETONATION

First let us consider that the term "detonation" may be a misnomer when used in connection with gun powder. Propellent powders, if used correctly, will burn. They will not explode or detonate. The word "detonation", however, is in popular use so we will use it here to avoid confusion.

When some powders are used for reduced loads, they will jump pressure enormously. In some instances such pressures will wreck the gun. Why? We admit that we do not know and no ballistics engineer has yet come forward with the answer. The point is that if conditions are right it can occur; therefore the reloader should never reduce the suggested starting loads listed in our Handbook. For reduced loads, use only cast lead alloy bullets in accordance with the data recommended. **Never guess** concerning the burning characteristics of powder.

BULLETS

All things being equal, the heavier the bullet, the greater the increase in pressure. Harder bullets, likewise, boost pressures due to their greater resistance to the rifling. Oversize bullets, and bullets with more bearing surface, will also up pressure.

CASES

All cartridge cases do not have the same inside capacity. Some cases, such as G.I. brass, have heavier walls which reduce the inside dimension of the case. Whenever you reduce the inside dimensions and use the same powder charge, you immediately boost pressure. Assorted brands of cases, when used with the same powder charge, will usually give variations in pressure.

PRIMERS

Primer burning time will add to the pressure. When working up a load, you should be consistent in using the same brand and type of primer. (See Primer chapter).

DEEP SEATING BULLETS

Oddly enough, our testing indicates that considerable variations in the seating depth of jacketed bullets does not appreciably increase or decrease pressure. Lead bullets will, however, up pressures when they are seated too deeply. The base of a lead alloy bullet has a tendency to expand when it is seated below the shoulder.

OVERALL LENGTH

Seating the bullet too far forward does raise pressure. In this instance, the bullet is bumping the rifling and it is receiving far greater resistance at the time of ignition. Watch the seating depth carefully and adhere to the overall cartridge length listed.

CHAMBER AND BORE DIMENSIONS

Pressure for a given load varies with the tolerance of the individual rifle. The condition of the throat, rate of twist, bore diameter, groove diameter, and chamber dimensions, etc., all affect overall pressure. The tolerance range for domestic rifles has been taken into consideration when determining the suggested **starting loads** in the Handbook. If your rifle is imported, however, (Sporter or Military) we suggest that you slug the barrel before attempting to reload. The bullet you use should correspond exactly to the groove diameter of your rifle. In some instances jacketed bullets which do not exceed .002″ over or under this diameter are permissible. Cast bullets can vary .003″ over or under the groove diameter.

READING PRESSURE SIGNS

As you work up to a maximum loading, adding powder gradually to the charge, watch closely for signs of excess pressure. Carefully inspect each cartridge case after it is fired. If your cases show no signs of excess pressure, continue adding another increment of powder to your total charge until you reach your best performing load. Fire each load for accuracy and be critical of any after effects. If accuracy falls off as you increase the charge, why go higher? You have found the load that performs best in your particular rifle. **Never exceed the maximum load listed.**

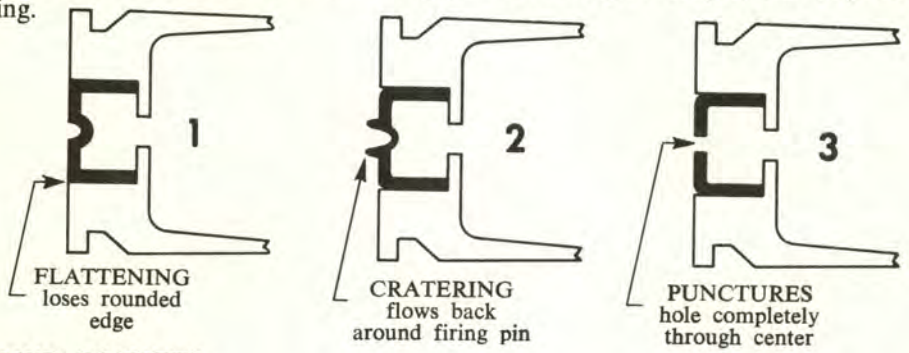
As you continue to use your maximum load, your cases will start showing signs of normal wear. The case brass will eventually fatigue and small cracks will appear in the necks or walls. Primer pockets will enlarge to a point where primers can be seated by thumb pressure. **These are not signs of excess pressure** (see Case chapter). Your cases have merely worn out and they are ready for the scrap heap. To differentiate between fatigued brass, and pressure, is not always easy, and for this reason only new cases should be used for working up your maximum charge.

The following text and examples deal with pressure signs as they might appear when working with new brass. Some of the signs are definite indications of excessive pressure — others are not. All signs, however, should be considered as evidence of pressure until proved otherwise. Collectively, they should always be considered as a sure indication of excess pressure.

PRIMERS

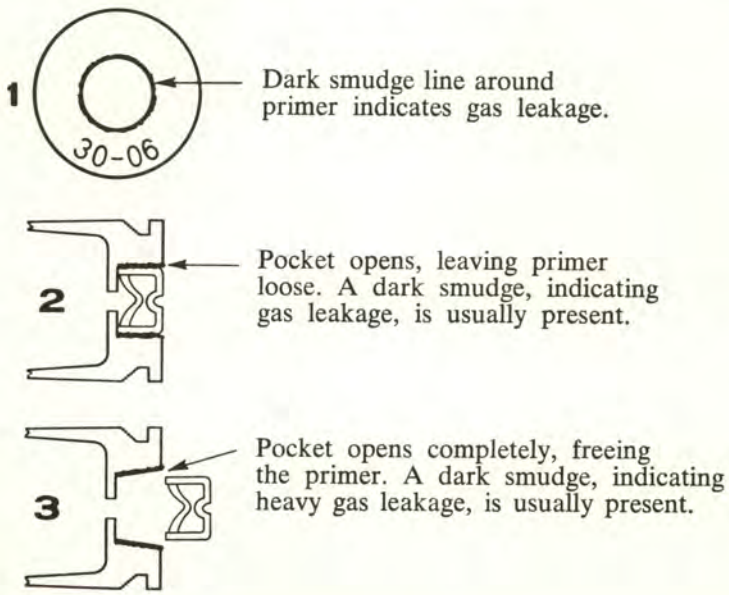
Some reloaders claim that little can be learned by examining fired primers. This is not so. A change in primer shape is usually one of the first indications that all is not well. Although soft primers will give false evidence of pressures, they are not normally encountered. Common sense tells us that we must stick to the same brand and type of primer when developing a load. By so doing, if we start with the suggested starting load without encountering pressure signs, and work up to a point where we suddenly note a change in primer contour — then it's obvious that something has happened!

The following drawings illustrate several changes in primer contour which indicate pressure problems. However, these changes may have been caused by other factors. For example, the change shown in drawing No. 3 may have been caused by a long firing pin. Common sense again tells us that a firing pin does not grow longer, half way through our testing.



PRIMER POCKETS

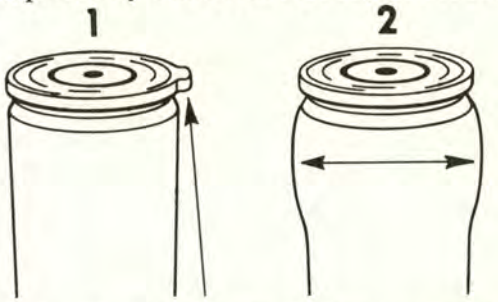
As the pressure grows, the head of the case is subjected to more and more stress. This will eventually open the primer pocket and force the primer out. Usually the first indication of this is a dark line (caused by gas leakage) around the primer. These signs may also indicate case fatigue, but remember, we are using **new** cases.



HEAD EXPANSION

The side walls and neck of the cartridge case are designed to expand freely. This expansion is necessary to seal off the chamber and prevent gas from leaking back between the case and the chamber wall. It also frees the bullet for its flight down the barrel. When a fired cartridge case is badly smudged by gas on its outer walls and neck (without other indications) it is actually a sign that the pressure is too low, and the case walls are not expanding properly.

Head expansion, however, is something else again. To fulfill its function, the case head must remain fairly rigid. Any flattening of the case head, or the flowing or expanding of brass in this area, is definitely a sign of very high pressure. The telltale signs in the illustrations below are often accompanied by other evidences of pressure such as blown primers and escaping gas.



Brass Flows Back Into Extractor Port — Head Stamping Flattens — Head Shows Irregularities of Bolt Face.

Case Expands In The Head Area.

A good micrometer is required for checking the head expansion illustrated in example No. 2. Normally, expansion of .001″ is considered evidence of very high pressure. Some rifles, however, (depending on their individual chamber dimension), will show some case expansion even with factory ammo. The best method is to fire a few factory loaded rounds through your rifle and measure the expansion of the brass. This can then be accepted as norm and any expansion over it should be considered excessive.

HARD EXTRACTION

If experienced suddenly, hard extraction is a definite sign of high pressure. A rough chamber might also create an extraction problem, but this would be obvious by its consistency.

VISIBLE GAS LEAKS

On very low pressure loads, when the case walls are not expanding properly, gas leakage may be visible (see head expansion). Under any other condition, however, this is a definite sign of high pressure. Look for blown primers, stretched pockets, etc.

CONCLUSION

To summarize, we suggest that you practice common sense and conservatism when working with maximum loads. Learn about pressure factors as they affect your particular gun. Don't guess. Don't be careless. Stalk your pressure limits, don't jump at them.

Specifically, consider these factors: if the accuracy of your load is good, if your case life is relatively long, if you haven't had undesirable signs of pressure when working up the load . . . then your pressures, whatever they are, are probably perfectly safe.

Also, we recommend that you read the chapters on Powder, Cases, etc., which are all part of this Reference Section. Those interested in shotshell pressures should also read Shotshell Ballistics and Tips chapter.

POWDER

The reloader is concerned with three relatively basic aspects of gun powder. One, he must select his powder wisely to assure that he has the proper powder for the job intended. Two, he must handle his powder with the care that common sense dictates. Three, he must store his powder in adherence to a few simple precautions that are necessary if the powder is to retain its usefulness and to prevent its presence from becoming a fire hazard.

SELECTING POWDER

Your Lyman Handbook will guide you in the proper choice of a powder for your particular cartridge. The data page which lists your cartridge also shows the various powders which we tested in this cartridge. In every instance, the application of these powders was chosen with care. The data page will also supply the suggested starting charge that we recommend with each powder and bullet weight listed.

Never assume or attempt to guess at the burning characteristics of a powder. This could lead you to trouble. Depending on their application, powders can change their burning characteristics rather drastically. The chemical compositions of the powder, the shape and size of the powder particle plus the density, or porosity of the powder composition do control its burning rate. Other factors, however, such as the degree of confinement, the heat of ignition, the temperature of the combustion chamber and the density of loading all effect the burning rate and must be carefully considered.

Our advice in selecting powder is never use any powder unless you are **positive** of its identity and then use this powder in accordance with printed data from a reliable source. Never exceed maximum loads, and never reduce starting loads. The listing of powders in this chapter does not represent all the powders available to the handloader. Nor does it show all the possible applications of listed powder. It is simply a listing of the powders which we used in compiling data for this Handbook. Testing time and space prevented the complete listing of every powder with every possible application. For more information on a specific powder we suggest that you contact its manufacturer.

HANDLING AND STORAGE

Powders should be stored in a cool, dry place out of the reach of children. They should never be left in a powder measure but returned to their original factory containers where they remain **clearly marked** until you are ready to use them again.

Naturally powder will burn and therefore, all normal cautions which apply to flammable commodities should be adhered to, keeping smokeless powder away from open flame, sparks, refraining from smoking while loading and general common sense is all that is required.

Black powder is a bit more touchy than smokeless powder, and in addition to the foregoing, it can be ignited by percussion. Black powder should be handled in such a manner as to prevent it from being banged around. The use of black powder in a powder measure is not recommended.

DU PONT BLACK POWDERS

FFFFG — Normally used only for priming flint lock pans.

FFFG — This was the finest granulation we used for our testing. Excellent in pistols and smaller caliber rifles. Also used for priming the flash pan on flint locks.

FFG — This granulation was used for the .58 caliber muzzle loading rifles and also for the muzzle loading shot gun.

FG — Normally used in very large caliber muskets.

DU PONT SMOKELESS POWDERS

HI-SKOR 700-X — This clean burning double base powder is used both for shot shell and pistol loading. In shot shells optimum ballistics are obtained with minimum charge weights. In pistol cartridges it produced very accurate target loads in calibers from .38 to .45. Available in 1/2 lb. canisters, 5 lb. caddies, and 12 lb. kegs.

PB — This porous base powder is used very successfully for both shotshell and pistol loading. It is a very versatile powder lending itself to loads from 28 gauge to 12 gauge and a wide range of handgun cartridges. Available in 1/2 lb. canisters, 4 lb. caddies, and 25 lb. drums.

SR-7625 — This single base powder has proven itself over a wide range of loading applications both in shotshell and pistol cartridges. Excellent results were obtained throughout our testing. Also used successfully for some cast bullet rifle loads. Available in 1/2 lb. canisters, 4 lb. caddies, and 25 lb. drums.

SR-4756 — This relatively slow burning powder is used predominately as a shot shell propellent. It serves as an excellent powder for heavy field loads. In some instances it was used very successfully with handgun cartridges. It is also used as a cast bullet propellent in some rifle cartridges. Packaged in 1/2 lb. canisters, 4 lb. caddies, and 25 lb. drums.

IMR-4227 — Here indeed is a versatile powder. It is used for a wide range of shotgun, pistol, and rifle cartridge loading. A very excellent powder for use with cast bullets in most rifle calibers. This powder, which is the fastest burning of the IMR series, is available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-4198 — This powder was developed especially for small and medium capacity rifle cartridges. It is also used successfully in straight walled cases. Very excellent accuracy is

obtained in the .222 Remington and similar cases when using this powder. It is also used for a number of cast bullet rifle loads. Available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-3031 — This powder, which the manufacturer recommends specifically for medium capacity cartridges, has proven very versatile. Excellent accuracy was had when used in cases such as the .243, .250/3000, .308, and .358 Winchester. In some rifle calibers this powder also performed well with cast bullets. Available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-4895 — This powder has proven itself as a standard for .30 caliber military cartridges. An all time favorite, this powder has proven very versatile and measures uniformly through the #55 Powder Measure. In most cases very uniform ballistics and excellent accuracy was common. Under most circumstances it burns slightly faster than #4320 and is available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-4064 — This powder burns exceptionally uniform in most medium and large capacity cases. Very excellent results were obtained in cases such as the .375 H & H Magnum. Also very popular with varmint shooters in such cartridges as the .243 Winchester and .244 Remington. As with all the IMR series, this powder is available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-4320 — This excellent IMR series powder is relatively slow burning, and has proven quite adaptable in a wide range of loading usages. Favored by many reloaders for the heavier bullets in moderate and large capacity cases. Available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

IMR-4350 — This is the slowest burning of the IMR series. Best suited to large capacity magnum type cases and to the heavier bullets in medium size cases. However the versatility of this powder permits it to be loaded into a wide range of cases, from the .220 Swift, to the .460 Weatherby Magnum. Available in 1 lb. canisters, 8 lb. caddies, and 20 lb. kegs.

HERCULES POWDERS

BULLSEYE — This very popular pistol powder delivered excellent accuracy throughout the complete range of pistol cartridges. This is the fastest burning powder in the Hercules line and is best suited to target type loads. It is available in 11 ounce canisters, 3 lb. kegs, and 15 lb. kegs.

RED DOT — Our use of this powder was similar to that of Bullseye. In some handgun cartridges it proved to be very accurate. Available in 8 ounce canisters, 3 lb. kegs, and 12 lb. kegs.

UNIQUE — This powder is a very excellent choice for use with cast bullets both in rifle and handgun cartridges. Very fine accuracy was obtained throughout the wide range of cartridges tested. This powder also proved useful when trying to duplicate factory velocities in cartridges such as the .38/40. Available in 13 ounce canisters, 4 lb. kegs, and 15 lb. kegs.

2400 — Here is another powder which proved very accurate, when used with cast bullets, through a wide range of rifle and pistol cartridges. An excellent choice for use with jacketed bullets in the .22 Hornet. Available in 1 lb. canisters and 5 lb. kegs.

HERCO — The coarse grained powder proved useful in a variety of pistol cartridges. Available in 1 lb. canisters, and 5 lb. kegs.

RELOADER 7 — This is the fastest burning of the Reloader series powder, and also the smallest in granulation. This powder provided very excellent accuracy in the .32 Remington, .32 Winchester Special, and the .35 Remington cartridges. Available in 1 lb. cans.

RELOADER 11 — This double base powder is useful in a large number of rifle cartridges. It is available in 1 lb. cans.

RELOADER 21 — This is the slowest burning powder in the Reloader series. It is best suited to the larger capacity cases. Available in 1 lb. cans.

ALCAN POWDERS

AL-5 — This dense progressive shotshell powder proved useful in the 20 gauge shells, as well as the 12 gauge Alcan cases. Available in 1/2 lb. tins, 3 lb., 6 lb., and 15 lb. kegs.

AL-7 — Another dense progressive shotshell powder which proved useful through a wide range of shotshell loadings. Available in 1/2 lb., 3 lb., 6 lb., and 15 lb. kegs.

AL-8 — This is a coarse grained powder that is designed basically for the heavier shot loadings. It is also excellent in the .30 M1 Carbine. Other uses included the .44 Magnum cartridge. Available in 1/2 lb tins, 3 lb., 6 lb., and 15 lb. kegs.

HODGDON POWDERS

H110 — This fast burning spherical powder proved useful in the .25/20 cartridge. Available in 1 lb. cans, and 20, 50, and 100 lb. kegs.

H335 — This spherical powder proved adaptable to a number of calibers. Loads should be worked up with extreme caution as pressures tend to take large jumps suddenly. Ignition problems were encountered in guns having a light firing pin fall. Available in 1 lb. cans, and 20, 50, and 100 lb. kegs.

Ball C#2 — This spherical powder is popular with a large number of shooters. The same cautions which apply to the H335 are applicable to Ball C#2. Available in 1 lb cans, and 20, 50, and 100 lb. kegs.

H380 — The spherical powder produced very uniform ballistics and excellent accuracy in a great many calibers. Especially suggested for jacketed bullets in the 7.35mm Italian (Terni) rifles. Available in 1 lb. cans, and 20, 50, and 100 lb. kegs.

H450 — The powder, a spherical one, is very well suited to large capacity magnum type cases. It was the only powder with which we were able to duplicate factory ballistics in the .308 Norma cartridge. Available in 1 lb. cans and 20, 50, or 100 lb. kegs

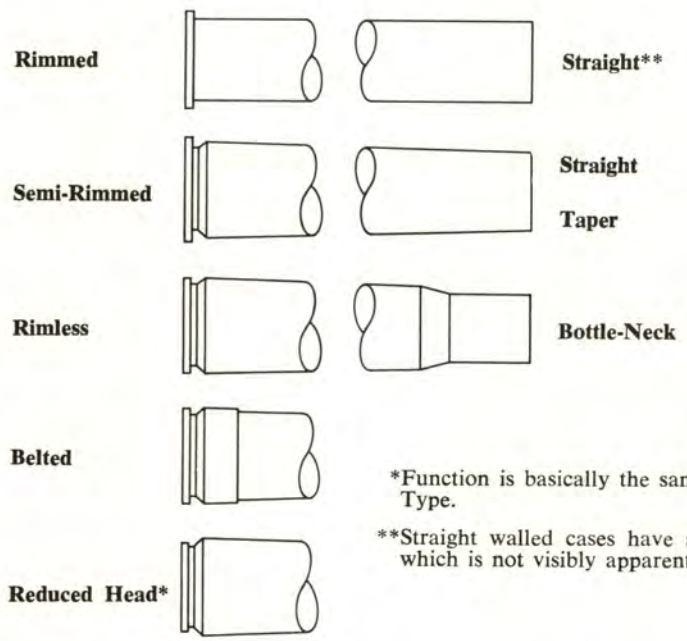
4831 — This powder is probably the most popular powder in the .264 Winchester Magnum and other similar large capacity magnum cases. It proved to be very accurate and delivered uniform velocities when used in the large capacity cases. Available in 1 lb. cans, and 20, 50, or 100 lb. kegs.

CASES

By the time your interest in shooting has advanced to the point where you are seriously considering handloading, you are already quite knowledgeable. At least you have purchased, handled and fired a good many rounds of factory loaded cartridges. This experience has given you a working knowledge of the various caliber designations and cartridge shapes, and you have learned to recognize the correct cartridge for your particular rifle. However, you have probably regarded your cartridge case as merely a container which held a packaged charge. After the charge had been fired, the case was discarded. The condition of the case after firing was of little concern to you.

Of course, in reloading we are particularly concerned with the condition of our empty cartridge cases because they now become reloadable components. Their condition after firing affects the safety and performance of our finished reloads. To appreciate fully the importance of the cases as reloading components, it is necessary that we learn about their composition and characteristics.

CASE STYLES

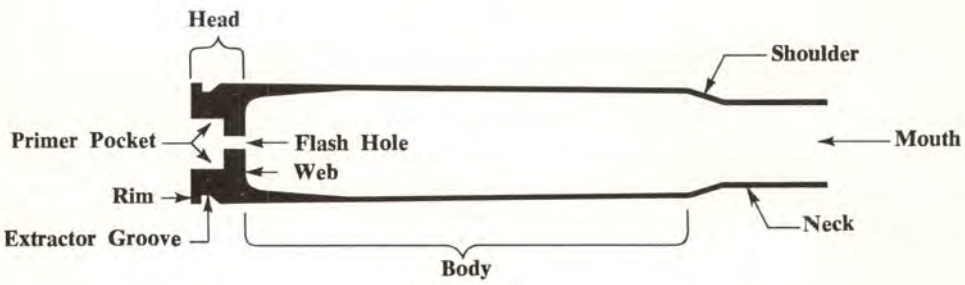


*Function is basically the same as Rimless Type.

**Straight walled cases have a slight taper which is not visibly apparent.

Showing the various head forms and body shapes standard to cartridge design. You can find a case example for almost any combination shown. For instance, a 30/30 has a rimmed, bottle-neck case, whereas the 458 Winchester has a belted head and straight body.

NOMENCLATURE OF A CARTRIDGE CASE



Nomenclature of a bottle-neck rifle case. While cases vary in shape and size, the same basic nomenclature applies to all center fire cartridges.

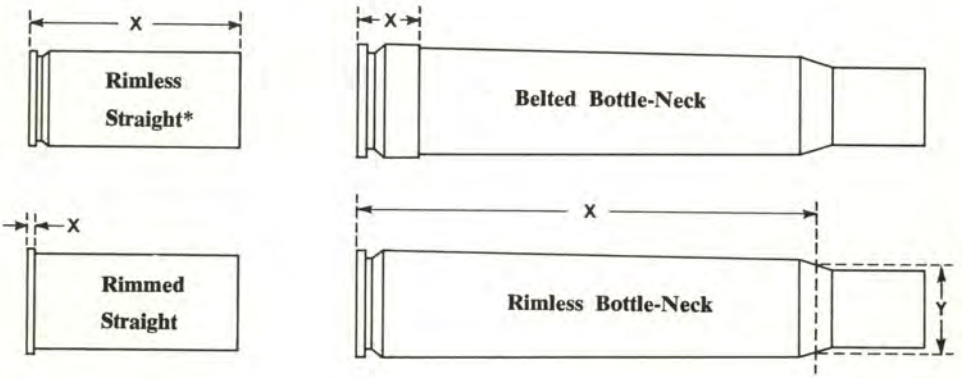
The most important function of the cartridge case is to seal off the breech and to safely handle the pressure which is built up during firing. Naturally, a brass case by itself is not strong enough to do the job. Supporting strength provided by the steel chamber walls and bolt face is also required. The case itself, however, must be capable of carrying its part of the stress load. To accomplish this the case must be in good condition and it must fit the chamber dimensions of the firearm.

If the cartridge case is to properly fit the chamber dimension of the firearm, it has to be made to extremely close tolerances. Two of these dimensions, **overall case length**, and **headspace**, are critical to the safety of the load whether it is an original factory load, or a reload. Handloaders must understand the importance of these two dimensions and respect them for what they indicate.

HEADSPACE

Headspace in a rifle chamber and in a cartridge case is exactly the same. It is the distance from the bolt face (or case head) to that part of the chamber (or case) that acts as a stop which keeps the loaded round from moving forward. In both instances, (chamber and case) this measurement is one of length. If it is not held to a close tolerance, the cartridge case will enter the chamber too far and lose the support of the bolt face. This condition would be termed "excessive headspace."

Depending on its case design, the headspace requirements of a cartridge will vary. A rimmed cartridge, for example, uses its rim to stop forward movement in the chamber. Others use different portions of the case such as the shoulder, mouth, etc. The following illustration indicates how headspace is measured with various case designs.



The design of the case governs the headspace dimensions. Note how X indicates headspace on three of the above examples, while X and Y are the controlling factors on the rimless bottle-neck example.

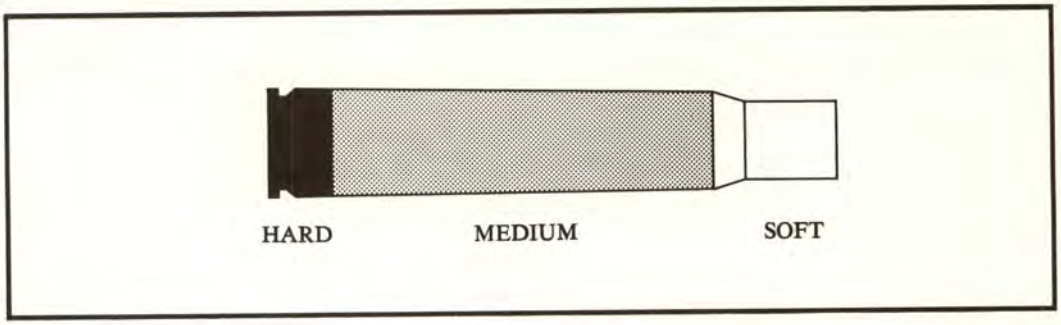
*NEVER CRIMP THESE CASES.

The reloader whose firearm is in good condition and who uses a set of quality reloading dies has little to worry about in regard to headspace. The only exception perhaps is with auto-pistol cases of the rimless straight type. As shown in the illustration, these cases headspace on the case mouth. If a crimp is used to hold the bullet in place, it may shorten the overall case length and cause excessive headspace. Poor quality reloading dies can also raise havoc with rimless bottle-neck cases. An improperly made die can move back or change the shoulder angle and drastically alter headspace. For more information on headspace, see the Pressure chapter.

Although good equipment and a little care will eliminate problems of headspace, other forces are constantly at work which effect changes in case brass. Such changes are not always obvious at a glance so the reloader must inspect his cases carefully in order to detect them.

MAXIMUM OVERALL CASE LENGTH AND TEMPER

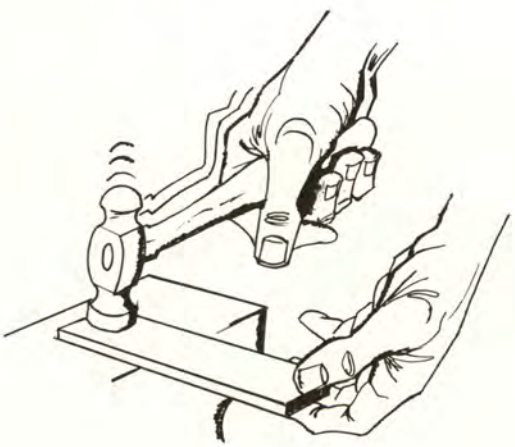
Cartridge brass is very carefully tempered in its final manufacture. Tempering leaves the neck, shoulder and body fairly soft, while the head is quite tough and hard. The obvious advantage is that the case walls will now expand freely (without cracking) to seal the chamber when the cartridge is fired. This prevents gas from escaping back between the cartridge case and the chamber wall. The head of the case remains hard so that it will resist the force that is applied to it.



Cartridge brass has the characteristic of becoming harder as it is worked. Therefore, repeated firing and resizing of a cartridge will eventually change the original tempering of the brass. The battering of chamber pressure coupled with the force applied by the resizing die will gradually work-harden the forward portion of the case and destroy its usefulness. This is called "fatigued brass" and it is recognized by cracks that begin to appear in the neck, shoulder or body of the case.

Repeated firing and sizing also affects the overall length and thickness of our cartridge brass. This combination of forces constantly pushes the case material forward, gradually thinning the side walls. More important, the neck of the case becomes longer and somewhat thicker than it was originally. As more and more of the brass is forced forward, the case neck will eventually lengthen until it exceeds the maximum tolerance allowed by the chamber. The greater thickness of the neck will tend to wedge the bullet in the chamber mouth and cause an undue increase in pressure.

A case neck which has lengthened, or thickened, excessively will sometimes show up in the bullet seating operation; the case will have a tendency to buckle when the bullet is being seated.



Brass

As brass is pounded, many of its original characteristics change. It becomes HARDER, THINNER and LONGER. The battering of chamber pressure, plus the forces applied by the resizing die affect cartridge cases in much the same manner.

To compensate for these changes which occur in the structure and length of the brass, you employ two simple operations. (1) Re-soften the case neck and shoulder by annealing them; (2) Trim off the excess material that builds up on the case neck.

How often you will need to trim, or anneal the cases, depends largely on the type of case you are using and the pressure of the load. Maximum pressure loads shorten case life tremendously. Bottle-neck cases receive more abuse from pressure than straight walled cases and require trimming more often. The trimming of any one case more than four times is not recommended. After this amount of trimming it may be assumed that the case walls are now too thin and that the neck has thickened to the point where it is raising pressure. Some pistol cases may never require trimming, but even they will eventually harden and crack from brass fatigue.

ANNEALING

Annealing is the process of altering the structure of any metal so as to make it softer and increase its ductility. A simple form of annealing will enable you to re-soften the neck and shoulder of your cases after they have become work-hardened. When a few cases show fatigue cracks, discard these few, but save the rest by annealing.

The only special equipment required for this job is a concentrated heat source, such as a propane torch, and a metal dish or pan. Fill the pan to half the case length with water and stand a cartridge case on its head in the pan of water. Heat is then applied to the neck of the case. When the neck reaches a cherry red color, quickly tip the case over into the water. The water serves as a quenching medium and leaves the neck and shoulder quite soft. It also protects the head of the case, keeping it cool so that it may retain its hardness.

TRIMMING

When the necks of your cases lengthen excessively, they must be trimmed back to a more workable overall length. A case length gauge, or vernier caliper is used to check the overall length of a cartridge case. Both of these items are described in the Accessory section of this Handbook. The Data page which lists data for your particular cartridge will supply a MAXIMUM CASE LENGTH measurement. Check your cases after resizing and never allow them to lengthen past the maximum listed measurement.

The Data page will also supply a suggested TRIM-TO-LENGTH. Several case trimmers are available (see Accessory section). These tools range from a simple device used in conjunction with a hand file, to more elaborate miniature lathes. Any one of these tools will perform the operations necessary to trim back a cartridge case.

CASE INSPECTION

In the preceding chapter on Pressure, we covered the inspection of cases after firing, and while working up a maximum load. We were then discussing new cases and signs of excess pressure. In this chapter we refer to the repeated use of cases with established

loads that have been carefully tested and found free of pressure or headspace problems. Specifically, we are talking about the wear and brass fatigue that eventually destroys the usefulness of cartridge brass.

For a thorough inspection of cases, there is a simple system. Group your cases into lots and keep a record of the number of times that you load them. This will help you to determine the case life — giving you an opportunity to extend that life when possible. If, for example, a few cases begin to show cracks from brass fatigue, you know that all the cases in that lot are in the same general condition because they have all been loaded and fired an equal number of times. You should now reject the few cases that are cracked, but save the remaining (uncracked yet) cases by annealing them. The same applies to trimming. As the cases show signs of lengthening, you can trim the entire lot and restore them to the correct overall length.

Before reloading, wipe your cases with a cloth to remove dirt and fouling. They should then be carefully inspected for fatigue cracks or splits in the neck, shoulder or body. Any cases showing these defects should be discarded. It is wise to mutilate the rejects with a pair of pliers before throwing them away. This insures against their accidental use in the future.

Your cases are now ready for reloading, but your inspection is not entirely finished. Cases should be checked after resizing to insure against fatigue cracks which might have appeared during the resizing operation. At this time they should also be checked for overall length and trimmed if needed. If trimming is necessary, trim them back to the trim-to-length shown on the Data page. Close attention while priming also weeds out any others that have stretched primer pockets. If a primer enters the pocket too easily, or seats loosely, discard the case because the primer pocket has stretched (opened) due to brass fatigue.

In conclusion, we will bring up a few matters that haven't been discussed in this chapter, but which may concern you at one time or another.

For one thing, there is the question of **Neck Resizing** as opposed to **Full Length Resizing**. In our experience, most cases show signs of fatigue first in the necks. Therefore, cases that have been full length resized give fully as much service as those that are neck resized only.

Another thing we wish to caution you against is the use of **steel cases**, or **balloon head** cases. Neither is recommended for reloading: The steel case because it is difficult to resize; the balloon head case because of its antique, weak design.

For further information on primer pockets, or Berdan primed cases, see Primer chapter. Further information on shotshell cases may be found in the Fireside Shotgunning chapter.

PRIMERS

Although a primer is responsible for only a very small percentage of the overall accuracy of the loaded round, it is, nonetheless, a very critical component.

If the primer is not properly seated, you will be constantly bothered by misfires, hangfires, or erratic ignition. Primers also have a bearing on the overall pressures in a given load.

The accompanying primer chart makes it easy to select primer sizes and styles. Never use primers for purposes for which they were not intended. While large rifle and large pistol primers have approximately the same external dimensions, they should never be interchanged. The priming compounds differ greatly, and the overall strength of the primers varies with each different size. In other words, a large rifle primer will cause higher pressures and offer more resistance to the firing pin blow than a large pistol primer will. The use of a large rifle primer in a pistol might result in a misfire or the undue raising of pressures. The use of a large pistol primer in a rifle case would result in poor ignition and possibly a pierced primer. In many cases the use of an incorrect primer will prevent flush seating of the primer.

TABLE OF PRIMER SIZES

	Large Rifle	Large Rifle Magnum	Small Rifle	Small Rifle Magnum	Large Pistol	Large Pistol Magnum	Small Pistol	Small Pistol Magnum	Shotshell "A" See Note	Shotshell "B" Below
REMINGTON & PETERS	9½	9½M*	6½ 7½**		2½		1½ 5½***		97	57 69
WINCHESTER & WESTERN	120—8½		116—6½		111-7		108—1½		209	
FEDERAL	210	215*	200		150		100		209	
ALCAN	Large Rifle MAX-FIRE		Small Rifle MAX-FIRE		Large Pistol MAX-FIRE		Small Pistol MAX-FIRE		WW209F 220 MAX-FIRE	G57F
CCI	200	250M*	400	450M	300	350M	500	550M	109	157

*For use with large rifle BELTED Magnum cases only.

**Designed for use with 221 Rem., 222 Rem., 222 Rem. Mag. & 223 Rem. cases. Contains a harder cup to prevent cratering with these hotter cartridges.

***Designed for use in 32 S & W and some 357 Mag. Revolvers—contains a softer cup to compensate for light hammer fall — necessary in some pistols which have been altered for double action shooting.

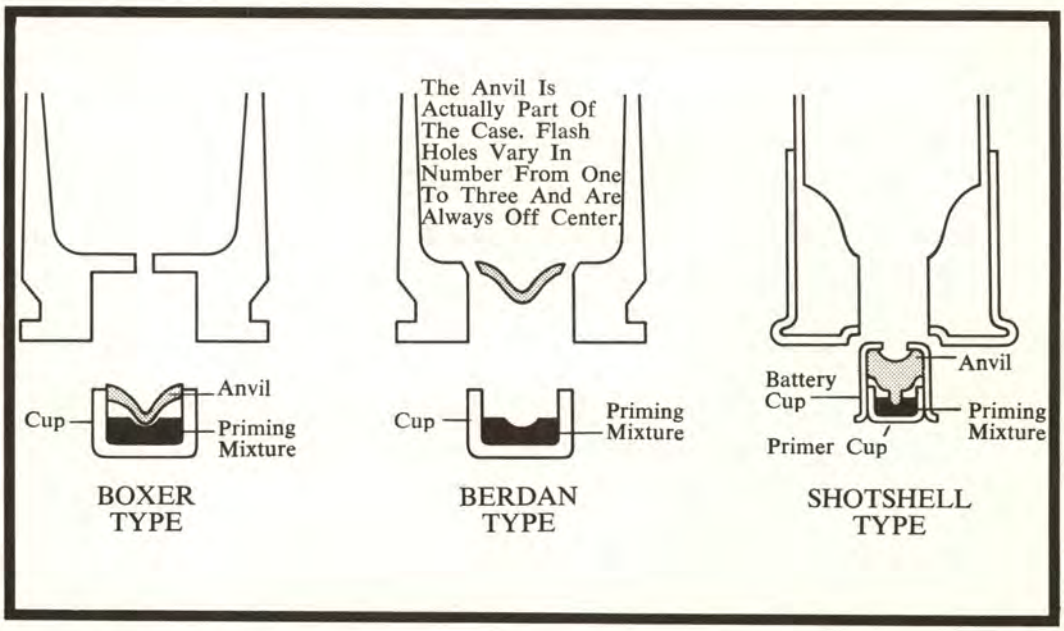
SHOTSHELL "A" — For use with Remington and Peters plastic target cases, all Winchester-Western cases, all Federal cases.

SHOTSHELL "B" — For use with Remington and Peters paper and Sp (Steel Plastic) cases.

When seating primers, make sure that the primer bottoms in the primer pocket. However, it should not be crushed. When seated, the primer should be flush with the case, or perhaps a few thousandths below the case head.

Primers with a rounded dome construction are best seated by a round priming punch, and flat primers are best seated with a flat punch. Before seating a primer, it is wise to examine it visually to make sure that the anvil is not missing. Although this rarely occurs, the resultant misfire could come at a very inopportune moment. Decapping of live primers is not recommended. If, for some reason, it must be attempted, do it slowly and carefully. Keep your hands and face away from the primer — it could ignite! To avoid a chain ignition reaction, it is also wise to move other live primers away from the area.

Basically, there are two types of primers in common use: 1. The boxer primer with its self contained anvil. 2. The Berdan primer which requires that the anvil be built into the cartridge case. The shotgun "battery cup" primer is actually a boxer primer. Because of its construction, however, the shotgun case cannot properly support a primer in a conventional manner, so the primer has a separate supporting cup into which it is placed. The illustration indicates the various types of primers.



DECAPING BERDAN PRIMERS

The Berdan is normally encountered only in cases of foreign manufacture. Because the flash hole is not centrally located in the case, the Berdan primers cannot be decapped in the normal fashion. The Berdan case usually has two flash holes slightly off center, so a decapping pin would not be able to remove the primer. The following method has been proven satisfactory for decapping Berdan primed cases.

To decap Berdan primed brass, stand the case on a block of wood which has a hole drilled through its center. This hole should be large enough to allow the primer to fall through. Then fill the case with water to the neck. A wood dowel, that just fits, is then inserted into the neck. Pressure quickly applied to the dowel will then pop the primer out. Apply the pressure by hand or with a small mallet.

Berdan primers can be seated with the aid of a regular vise. Simply start the primer by hand and then place the case in the vise and close it gently until the primer is flush with the case.

HANDLING PRIMERS

A word of caution on handling primers. Primers are detonated by percussion (a sharp blow). Therefore, they should not be tossed around. As packaged by the manufacturers, primers are quite safe to handle. But an old glass jar full of primers can become lethal if dropped.

The use of auto primer feeds has become quite common. They certainly increase the speed and convenience of producing reloads. However, if a jam or malfunction should occur with one of these devices, it should be carefully disassembled. Banging or striking the mechanism in order to free the jam could detonate the primers in the tube.

CRIMPED IN PRIMERS

Some military brass uses crimped in primers. After decapping, these cases must have the primer pocket opened up or reamed. There are various commercial tools to do this job. The Lyman primer pocket reamer, available in large and small sizes, will perform this operation quickly and inexpensively.

BULLETS

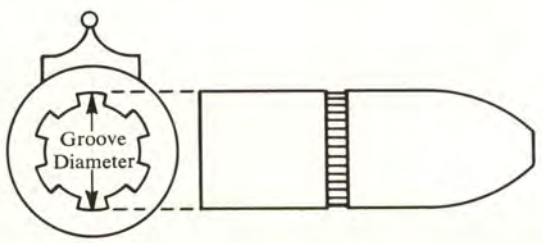
The subject of bullets is much too broad to be adequately covered in a single chapter or, for that matter, in one publication. However, bullet selection is extremely important to the reloader because the bullet is probably the single most important factor affecting load performance. Therefore, in this chapter we will present a summary on the subject of bullets which we believe will be the most helpful. We also recommend your reading of the chapters, "Accuracy With Cast Bullets," and "Accuracy With Jacketed Bullets."

When bullets are discussed, we hear about "interior" and "exterior" ballistics. Actually, these two terms refer to the ballistic conditions which exist during two distinct phases of bullet flight. "Interior" applies to the conditions which take place while the bullet is inside the rifle. "Exterior" refers to the conditions after the bullet has left the muzzle and is spinning on to the target. To choose a bullet which is safe and accurate, interior and exterior ballistics must be considered.

YOUR BULLET IN THE BARREL

First, bullets should fit exactly to the groove diameter of your rifle. If the bullet diameter is too large, it can boost chamber pressures. With hard jacketed bullets, these pressures will increase dangerously. If the bullet diameter is too small, the bullet will be highly inaccurate and inefficient. Commercial jacketed bullets when used in modern domestic firearms, seldom, if ever, create problems in bullet fit. Both firearms and projectiles are made to very close tolerances. This is not the case, however, with older guns or with guns of foreign manufacture. For example, groove diameters of the 8 x 57mm Mauser can vary from .318″ to .323″, and some imported sporters (particularly the .243's) have dangerously tight groove diameters.

Whenever there is a question of the exact groove diameter of your rifle or pistol, we suggest that you slug the bore and proceed as explained in the chapter, "Accuracy With Cast Bullets."

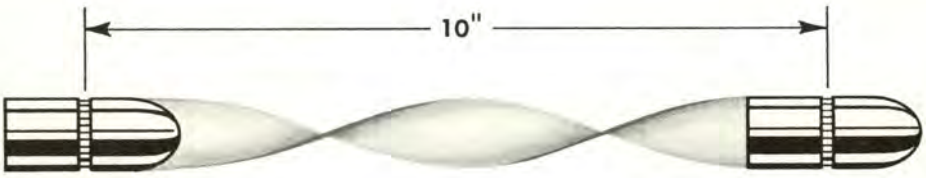


The Bullet Must Fit The Groove Diameter Of The Rifle In Which It Is Used.

The rate of twist of the rifling is directly related to the bullet weight (and velocity) which that particular rifle can handle with accuracy. Heavier and longer bullets in a given caliber require a faster rifling twist. A good example of this is the 30/06 and the .308 Winchester. Both rifles use the same diameter (.308) bullets which are available in a wide assortment of weights ranging from 110 grains up to 220 grains.

While both of these rifles turn in excellent results with all of the medium weight (150 and 180 gr.) bullets, their ability differs when it comes to the very heavy or the very light. The 30/06 will handle 220 grain bullets better because it has a faster twist of one turn in ten inches. On the other hand, the .308 Winchester turns in better results with the light 110 grain bullets due to its slower twist of one turn in twelve inches.

If very light bullets are used in a barrel with a fast twist, the bullets tend to accelerate too rapidly — jump the rifling — and deform themselves. The Data page of this Handbook which lists your cartridge, shows the rate of twist which was present in our test rifle. It also lists the bullet diameter which is standard for this cartridge. Whenever we had difficulty in obtaining accuracy with a particular bullet weight, or when we encountered wide variations in groove diameters, we made mention of it in the cartridge story which appears on the Data page.



1 IN 10 TWIST — Bullet makes one complete turn in ten inches of barrel travel.

YOUR BULLET IN FLIGHT

Once the bullet is free from the muzzle, it becomes a gyroscope. Its ability to fly on a uniform trajectory depends on its perfection of form, its balance and its rapidity of spin. Not only does the rotation of the bullet hold it to a uniform plane, it also imparts to the projectile the ability to resist other forces (wind, gravity, etc.) which strive to alter its course.

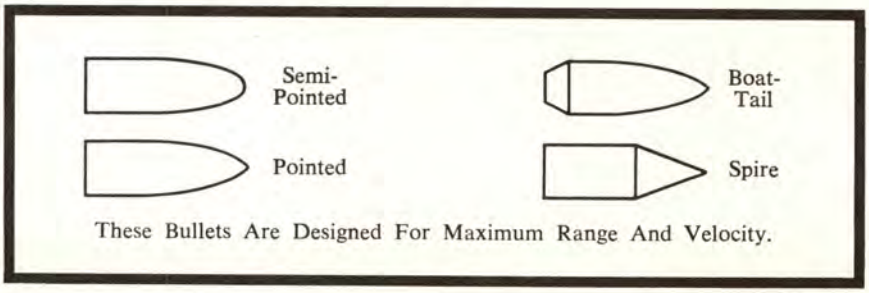
Every bullet has some minor or major imperfection which makes it different from the other bullets in its group. Even the very best bullets are never quite perfect gyroscopes and this shows up in the size of the groups which we fire. When we use care and select bullets for their uniformity of weight, etc., we are usually rewarded by smaller groups and better scores. On the other extreme, if we're careless in handling our bullets by deforming them in the magazine, or shooting them through a poor bore, then results are noticeably poor.

The shape and weight of the bullet affects its ability to perform at any given range. Heavier bullets (as opposed to light bullets of the same caliber) tend to better conserve their forward velocity and rotational spin. For this reason, a heavier bullet will have a longer extreme range, and deliver a higher percentage of its original energy to the target. Light

bullets (as opposed to heavy bullets of the same caliber) can be driven at higher velocities and consequently give flatter trajectories, but have a shorter usable range. The lighter bullet is also more affected by the forces of the wind.

The nose shape (ogive) of the bullet indicates the purpose for which it is designed. Sharp pointed bullets overcome the resistance of air and conserve their remaining velocity much better than blunt nose bullets. Pointed bullets (as opposed to blunt bullets of the same weight and caliber) will give flatter trajectories and a longer range potential. This ballistic superiority of the pointed bullet is not appreciably noticeable at ranges under 200 yards.

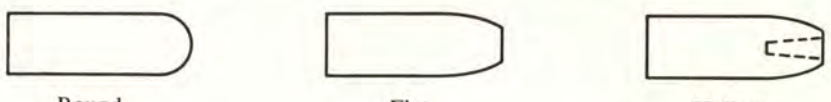
Another long range bullet is the boat-tail design. The base of this bullet is tapered at an angle of about nine degrees. The purpose of the taper is to reduce drag caused by a vacuum at the base of the bullet. This feature helps the bullet to conserve its remaining velocity. A bullet of the boat-tail design has no short range advantage. Its superiority starts to show up at ranges of about 600 yards, or after the bullet's remaining velocity has been reduced to about the speed of sound (1100 F.P.S.).



These Bullets Are Designed For Maximum Range And Velocity.

Naturally, maximum range and maximum velocity are not always required of a bullet. There are times, in fact, when sharp pointed bullets present definite disadvantages which offset their long range superiority. In a tubular magazine rifle, for instance, the use of a pointed bullet is actually dangerous because the point of one bullet rests against the primer of another cartridge. Under such conditions, a pointed bullet could accidentally chain fire the magazine when the rifle was under recoil.

Many very fine blunt nose bullets are available to the reloader particularly in the larger calibers. These bullets are designed almost exclusively for hunting. Their "controlled expansion" features better suit them for game loads. At the short-to-medium ranges (up to about 200 yards) for which these bullets are designed, they are usually just as accurate as the pointed type.



Bullets Of These Types Are Designed Primarily For Hunting.

PENETRATION AND EXPANSION

A target shooter can easily justify any bullet weight, or design, which gives him his best shooting load. The hunter must go one step further. Hunting requires a bullet which will "go to work" after it strikes the target — **it must kill clean**. Putting together good hunting loads is not always easy and sometimes we make concessions in accuracy in order to use a particularly good bullet weight or design.

On big game, the bullet must possess the ability to drive deeply into the vital area of a large animal **and stop there**, delivering its total remaining energy to the body tissue. If the bullet is too heavy, or too hard, it will penetrate completely through the animal's body and defeat our purpose by allowing much of the bullet's energy to escape with the bullet. If, on the other hand, it is too light, or too soft, the bullet may never reach a vital area and break apart when it strikes a shoulder or rib.

In cartridges that are intended for varmint hunting, fast, light bullets are used. Such bullets have very thin jackets and are designed to virtually blow up on contact and expand their total energy on the small body area of varmints such as woodchucks or crows. Not only are these fast little projectiles excellent for the purpose for which they are designed, but their explosive characteristics limit the danger of ricochet.

Ammunition companies and manufacturers of jacketed bullets have vast experience in this area of bullet expansion. Exhaustive testing and field research have produced the reliable jacketed bullet design which they offer for sale. We recommend that you follow their advice when choosing a bullet for a particular game animal. Your experience, however, is still an essential factor because only by a certain amount of trial and error on your part can you develop truly good hunting loads. Try several different brands of the same bullet weight and style before making up your mind on a load. Bullet construction and jacket thickness can vary considerably from brand to brand.

CAST LEAD ALLOY BULLETS

In selecting bullets for various purposes, do not overlook the benefits which can be had from cast bullet shooting. First, there is this business of economy. A reloader can turn out a good cast bullet for a fraction of the cost of its jacketed counterpart. Ten pounds of bullet metal, for example, makes over twelve hundred (55 gr.) bullets which is a good bit of shooting for anyone's money. Aside from the outright savings involved, the cast bullet is a proven performer which plays an important part in today's reloading picture.

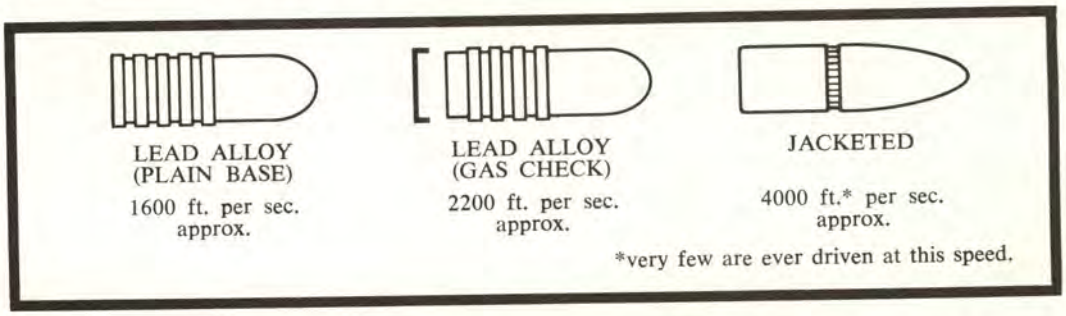
Not only is the cast bullet still at the top of the list as the number one handgun bullet, it is steadily regaining importance to the rifle shooter. Cast bullets lend themselves better to low velocity (light recoil) shooting than do jacketed bullets. While this may not sound like a great advantage, consider, if you will, the hundreds of letters that we receive each year from satisfied users of cast bullets. These shooters have gone beyond the heavy load, heavy recoil, loud noise stage. Instead, they have found that about 95% of their shooting can be done more accurately, more comfortably, and more economically with cast bullet loads. Many letters are from shooters who, using a particularly super accurate cast bullet reload, have won 100 and 200 yard rifle matches against shooters using the finest jacketed bullets available.

Another advantage of the cast alloy bullet is added barrel life. Cast bullets (due to the shorter burning time of the charge) extend indefinitely the accuracy life of your barrel. It's true, of course, that in a rifle such as a 30/06, the alloy bullet cannot be driven at the peak velocity of the rifle and cartridge. At 200 yards, however, bullet #311291 (#2 alloy) can give many 06 users a real surprise in what optimum accuracy means. In preparing accuracy loads for this Handbook, a great many of our cast bullet groups were actually half the size of those turned in with jacketed bullets in the same rifle.

In some rifles, (30/30, 32 Win. Spec., 35 Rem., etc.) the alloy bullet can be used at a speed which actually equals the rifle's velocity capability. Throughout this Handbook we have listed recommended data to be used with cast alloy bullets. We have also suggested bullet numbers which we feel will turn in the best results with this data. If you are a handloader who would like to experience the thrill of superior performance and at the same time save money, then don't overlook the cast alloy bullet.

CAST BULLET METAL AND VELOCITY

The speed at which a bullet can be driven depends largely upon the hardness of the bullet itself. If the bullet material is too soft, the bullet will deform itself in the bore and become highly inaccurate in flight. It would be, in fact, a very poor substitute for the perfect gyroscope which we mentioned earlier in this chapter. The toughness of a jacketed bullet allows it to be driven at very high velocities (over 4000 F.P.S. in some instances and with some bullets). The cast bullet never equals the jacketed bullet's hardness and, consequently, it must be held to the more moderate velocity of approximately 2200 F.P.S.

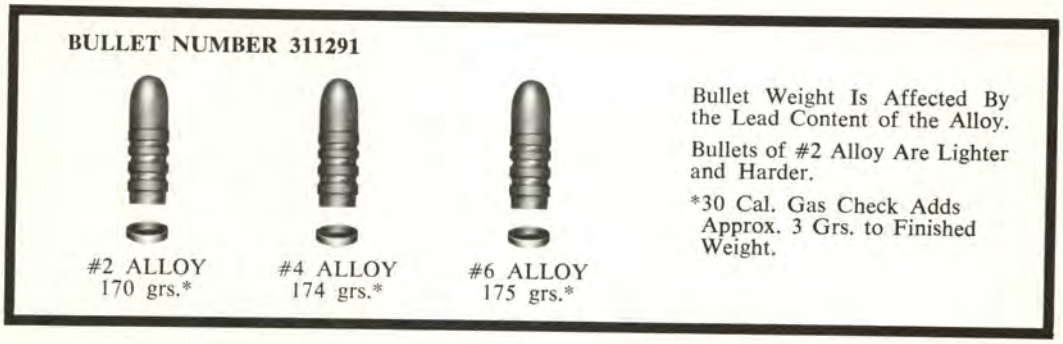


The foregoing illustration shows an approximate working velocity comparison between jacketed and cast bullets. The cast bullet velocities shown can only be reached with hard bullets of #2 alloy. The gas check (shown near center bullet) is made of gilding metal. These small cups slip over the bullet base to protect it from hot powder gases and to permit higher velocities.

Over the years Lyman has offered three different lead alloy materials for bullet making use. These alloys vary in their composition and are identified as: #2 alloy, #4 alloy, and #6 alloy. Number 2 alloy is the hardest of these three materials (others do not contain antimony) and it is recommended for all cast bullet rifle and pistol loads shown in this Handbook. Only pure lead should be used for rifled slugs and muzzle loading bullets.

#2 ALLOY { 90 parts lead
5 parts tin
5 parts antimony

The antimony in #2 alloy is used to harden the bullet. The mixture, however, must also contain tin. The reason for this is that while antimony mixes with lead in the molten state, it will not remain mixed when it solidifies. If tin were not added, we would have pure antimony crystals surrounded by pure lead. A bullet of this type while it feels hard, would certainly lead the bore. In a lead-tin-antimony mixture, the antimony crystals will be present just the same, but they will be imbedded in a lead-tin mixture.



The foregoing illustration shows how the lead content of the alloy affects the weight of the finished bullet. This picture features the same bullet cast from three different alloys. The cast bullet weights shown for rifle and pistol data in this Handbook represent bullets cast from #2 alloy only.

MIXING YOUR OWN #2 ALLOY

Making your own bullet alloy is really quite easy. A mixture that compares very favorably to Lyman #2 alloy may be concocted by melting down a few items which are readily available. Some of these items contain small traces of other metals, but from the standpoint of making bullets they may be considered as pure.

5½ lbs. wheelweights
1 lb. 50/50 bar solder
3½ lbs. lead
} Makes 10 lbs. #2 alloy

4 lbs. Line-O-Type
1 lb. 50/50 bar solder
5 lbs. lead
} Makes 10 lbs. #2 alloy

Wheelweights contain about 9% antimony and they are available at most any gas station or automotive supply. Bar solder which contains 50% tin and 50% lead is available from plumbing and hardware stores. Line-O-Type which contains 12% antimony, 4% tin, and 84% lead, can often be purchased from a local printer. Pure lead may be found at a junk yard in pipe form, or it can be purchased in ingot form from a local plumber.

WHY CAST BULLETS MUST BE SIZED

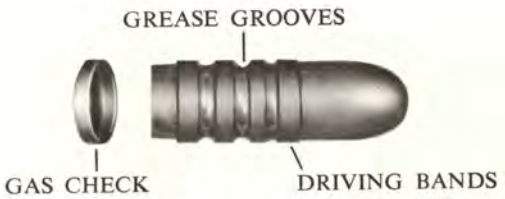
When lead alloys solidify they also shrink in size. The more lead content to the alloy, the more this shrinkage is noticeable. Depending upon the type of alloy used, and the heat of the mould and mixture, this shrinkage could be as much as .003". Our freshly cast bullet is, therefore, somewhat smaller than the mould cavity in which it was cast.

As our bullets must fit the groove diameter of the rifle, we, then, size them down to an exact standard diameter. The cavity in a bullet mould is made large enough to compensate for this shrinkage and resizing. For example, most 30 caliber moulds produce bullets of approximately .311" diameter which leaves enough metal (even after it shrinks) so that the bullets can be sized to the standard .308" groove diameter of the rifle.

The bullet sizing dies (G, H & I) which Lyman offers for sale, **do not cut away bullet metal** to reduce and standardize the bullet diameter. These dies **actually swage** bullets into perfect round projectiles which have a standard and consistent diameter. Sizing a bullet in these dies does not alter the bullet's cast weight as no metal is removed.

The versatility permitted by sizing bullets is a real benefit to the shooter who owns a rifle which has a non-standard groove diameter. By casting and sizing his own bullets, the shooter has the opportunity of fitting them exactly to his rifle's dimensions. For example, if a particular 30/06 has an oversize .309" groove diameter, he can resize to this diameter and obtain a perfect bullet fit (see "Accuracy With Cast Bullets" in this section).

When a cast bullet is pushed into a sizing die it is lubricated at the same time and a gas check is seated. A special bullet grease (Lyman bullet lubricant) is forced into the grease grooves which are designed into the bullet. The use of this lubricant increases accuracy and eliminates barrel leading if the correct bullet metal and velocities are adhered to.



The foregoing illustration shows a typical cast bullet design. The bullet pictured is one designed for use with a gas check (note base). A bullet of this type may be used with, or without, the gas check provided the proper velocities are adhered to. Many cast bullets are designed with plain bases (not for use with gas check). These bullets must be restricted to their lower velocity level.

HOLLOW POINTS

When a cast bullet is to be used on game animals, we recommend the use of a hollow point bullet. All Lyman bullet designs (with the exception of hollow base bullets) are available in hollow point design. To order these moulds, the shooter need only to specify the bullet number he wishes and write H.P. after the number. Because of their construction, hollow point moulds are available in single cavity only. While hollow point bullets are lighter in weight than conventional bullets of the same number, the reloader may feel free to use conventional cast bullet data.

For more information on cast bullets see the "Accuracy With Cast Bullets" chapter in this section of your Handbook.

The remainder of this chapter is devoted to a listing of the various bullets which were used in collecting data for this Handbook. While this is not a complete list of all the bullets which are available to the handloader, you will none the less find it useful in selecting a bullet for your load. Where possible we have added notes and suggestions which we felt would be helpful.

ALL BULLETS ARE PICTURED ACTUAL SIZE

JACKETED RIFLE BULLETS

.22 CALIBER (.224 Dia.)

40 GRAINS

Pictured is a Speer soft point which is designed primarily for such cartridges as the 22 Hornet and 218 Bee. A similar bullet is also available from Sierra.

45 GRAINS

The bullet pictured is a Remington Hollow Point. Bullets of the same caliber and weight but with various nose designs (soft point, semi-pointed, etc.) are also available from Hornady, Speer, Sierra and Winchester. While this weight bullet is normally used in 22 Hornet and 218 Bee cartridges, a high velocity version (having a tougher jacket) is available for cartridges producing 3000 F.P.S. or more.

50 GRAINS

The bullet pictured is a Remington Soft Point. Bullets of the same caliber and weight but with various nose designs (pointed soft point, Spitzer, Semi-pointed, Full-Jacket, Spire, etc.) are available from Hornady, Speer, Norma, Sierra and Winchester. These bullets are basically for velocities in excess of 3000 F.P.S. A thinner jacketed version offered by both Hornady (SX) and Sierra (Blitz) is designed for 222 type cartridges.

52 GRAINS

The bullet pictured here is a Speer Hollow Point. A Sierra 53 grain bullet is also available and may be used interchangeably with the 52 grain bullet data listed in this Handbook.

55 GRAINS

The bullet pictured is a Remington Soft Point. Bullets of the same caliber and weight but with various nose designs (Pointed Soft Point, Semi-pointed, Spitzer, Full Metal case, Spire, etc.) are available from Hornady, Remington, Speer, Norma, Sierra and Winchester. A thinner jacketed version offered by both Hornady (SX) and Sierra (Blitz) is designed for 222 type cartridges.

63 GRAINS

Pictured is a Sierra Semi-Pointed bullet. This is an excellent bullet for the hotter 22 calibers such as the 220 Swift or the 22-250.

.243 CALIBER & 6mm (.243 Dia.)

60 GRAINS

The bullet pictured is a Sierra Hollow Point. This is a light bullet which is best suited for ranges under 200 yards and small varmint.

70 GRAINS

The bullet shown here is a Hornady Hollow Point. This is a light bullet and is best suited for ranges under 200 yards and small varmint.

75 GRAINS

Pictured is a Remington Pointed Soft Point. Bullets of this same caliber and weight are also available from Hornady, Speer, Norma and Sierra. Nose shapes include Hollow Point and Spire. This is an excellent weight bullet for all types of varmint shooting.

80 GRAINS

Pictured is a Remington Pointed Soft Point. Bullets of this same weight and caliber are also available from Speer and Winchester. Other nose shapes include the Hollow point design.

85 GRAINS

The bullet pictured is a Sierra Spitzer. This bullet is exceptionally good for very long range varmint shooting.

90 GRAINS

The bullet pictured is a Remington Soft Point, but similar bullets are also available from Speer and Norma. Available nose shapes include the Spitzer design. A bullet of this weight is an excellent choice for deer and like game.

100 GRAINS

The bullet pictured is a Remington Pointed Soft Point. Bullets of this same weight and caliber but with other nose designs (Soft Point, Spitzer, Semi-Pointed, Full Jacket, Spire, etc.) are available from Hornady, Norma, Sierra and Winchester.

.25 CALIBER (.257 Dia.)

60 GRAINS

Pictured here is a Remington Hollow Point. Bullets of this same weight and caliber but having various nose designs (Spire, etc.) are also available from Hornady, Speer and Winchester. Remington and Winchester bullets are designed for 25/20 and .256 Win. velocities. Bullets from other makes are designed for velocities of 3000 F.P.S. and faster.

75 GRAINS

Pictured here is the Sierra Hollow Bullet. A similar bullet is also available from Hornady. Either bullet is an excellent choice for varmint shooting.

86 GRAINS

The bullet pictured is a Remington Soft Point which is designed primarily for 25/20 velocities. This bullet can be used successfully in the .256 Winchester.

87 GRAINS

The bullet pictured here is the Remington Soft Point. Bullets of this same weight and caliber but having various nose designs (pointed soft point, Spire, Spitzer, etc.) are also available from Hornady, Speer, Norma, Sierra and Winchester. This is usually the best 25 cal. bullet weight for long range varmint shooting.

100 GRAINS

Pictured here is a Remington Pointed Soft Point. Bullets of the same weight and caliber but having various nose designs (Spitzer, Soft Point, Spire, etc.) are also available from Hornady, Speer, Norma, Sierra and Winchester. Bullets of this weight are a good choice for deer, antelope, etc.

117 GRAINS

Pictured is a Remington Soft Point. Similar bullets are also available from Hornady, Sierra and Winchester. Nose shapes include Round Nose and Spitzer. Boat-tail bullets are also available for 1000 yard target shooting. Bullets of this weight afford maximum penetration for this caliber.

.264 CALIBER & 6.5mm (.264 Dia.)

85 GRAINS

Pictured is a Sierra Hollow Point. This is a good short range varmint bullet which is best suited for velocities of under 3200 F.P.S.

100 GRAINS

The bullet pictured is a Remington Pointed Soft Point, but similar bullets are also available from Hornady, Sierra and Winchester. Nose designs include Spire and Hollow point. An excellent long range varmint bullet.

120 GRAINS

The bullet pictured is a Sierra Spitzer, but similar bullets are also available from Remington and Speer. This is a good bullet for deer and antelope.

129 GRAINS

The bullet pictured is a Hornady Spire Point which is an excellent bullet for medium sized game.

140 GRAINS

The bullet pictured is a Remington Pointed Soft Point. Similar bullets with Round or Spitzer nose design are available from Winchester, Hornady, Speer and Sierra. The Sierra version with boat-tail is excellent for 1000 yard target shooting. Bullets of this weight are designed primarily for the larger 6.5 cases such as the .264 Magnum.

160 GRAINS

The bullet pictured is a Hornady Round Nose. This bullet is designed primarily for the medium and small capacity 6.5 cases (as 6.5 Mann. Schoe. and 6.5 x 55).

.270 CALIBER (.277 Dia.)

90 GRAINS

The bullet pictured is a Sierra Hollow Point. This bullet is a good selection for short to medium range varmint shooting.

100 GRAINS

The bullet pictured is a Remington Pointed Soft Point. Bullets of the same weight but with varying nose designs are also available from Hornaby, Speer and Winchester. Bullets of this weight are excellent for long range varmint shooting.

130 GRAINS

The bullet pictured is a Remington Pointed Soft Point. Bullets of this same weight are also available from Hornady, Speer, Norma, Sierra and Winchester. Nose shapes will vary with brand, but they include Hollow Point, Soft Point, Spitzer, Full Jacket and Spire. Also available are boat-tail designs. An excellent weight hunting bullet for deer and similar game.

150 GRAINS

Pictured here is the Remington Soft Point. Bullets of this same weight but with various nose designs are also available from Hornady, Speer, Norma, Sierra and Winchester. Nose selection includes Spitzer, Full Jacket, Spire and Round Nose. With the proper nose this bullet is good for big game at ranges up to 200 yards.

170 GRAINS

Pictured here is a Speer Soft Point. This bullet is best suited for Magnum cases and is usable where maximum penetration is required.

.284 CALIBER & 7mm (.284 Dia.)

120 GRAINS

Pictured is a Sierra Spitzer which is a good varmint bullet for 7 M/M cases. A similar bullet is also available from Hornady as a Spire Point.

139 GRAINS

Pictured is a Hornady Spire Point. An excellent choice for long range shooting.

150 GRAINS

Pictured is the Remington Pointed Soft Point. Bullets of this weight but having various nose designs (Soft Point and Full Jacket) are also available from Norma and Winchester. Remington offers this bullet with a heavier than normal jacket for use in magnum cartridges.

165 GRAINS

Pictured is a Remington Soft Point. A big game bullet for medium range.

175 GRAINS

Pictured is the Remington Soft Point. Similar bullets of the same weight are also available from Hornady, Norma and Winchester. Remington offers a special version with a heavy jacket for use in Magnum cases.

7.35mm (.298 & .300 Dia.)

128 GRAINS

Pictured is the Hornady Spire Point which has a diameter of .300″. This bullet is for use in the 7.35 M/M Italian, and may be used in rifles having a .300″ or .301″ groove.

150 GRAINS

Pictured is the Speer Soft Point. This bullet has a diameter of .298″ and may be used in rifles having a .298″ or .299″ groove.

.30 CALIBER (.308 Dia.)

110 GRAINS

Pictured is a Remington Pointed Soft Point. In various nose shapes (Round Nose, Hollow Point, Full Jacket, Spire, etc.) bullets of this same weight are available from Hornaby, Remington, Speer, Norma, Sierra, and Winchester. While these bullets are basically designed for varmints, round nose versions seem best suited for moderate velocity cartridges such as the 30M1 Carbine and 30/30.

125 GRAINS

Pictured is a Remington Pointed Soft Point. Bullets of this same weight are also available from Sierra and Winchester. While these bullets are designed for long range varmint shooting, they are also excellent target bullets for 300 yards. This weight bullet may be used with the 130 grain bullet data listed in this Handbook.

130 GRAINS

Pictured is a Hornady Spire Point. Bullets of this same weight are also available from Speer and Norma. Nose styles include Full Jacket and Semi-Pointed designs. Some are available with boat-tail. This bullet has the same application as the 125 grain weight.

150 GRAINS

Pictured is a Remington Soft Point. This is one of the most popular thirty caliber bullet weights and is therefore available from most every bullet maker. Bullets of this weight can be had in most any nose design, but due to the multiple purpose of this bullet weight, many specialty designs exist. Some bullets are designed for 30/30 velocities, while others are designed for the velocities of the 30/06 and still others are intended for magnum speeds. It is important that you select a bullet which is designed for your application.

165 GRAINS

Pictured here is a Speer Spitzer. Bullets of this weight are becoming popular as thirty caliber target bullets. Both Hornady and Sierra offer match bullets of 168 grain which may be used with the data listed for the 165 grain bullet in this Handbook. If this substitution is made, however, reduce the maximum charge one full grain.

170 GRAINS

Pictured is a Remington Hollow Point. Bullets of this same weight are available in either flat or Round Nose from most every manufacturer. These bullets are designed specifically for 30/30 velocities.

180 GRAINS

Pictured here is a Remington Soft Point. This thirty caliber bullet competes in popularity with the 150 grain weight and again is available from most every bullet maker. A wide selection of nose designs are offered. The 180 grain weight is an excellent thirty caliber hunting bullet for all but the largest of big game.

200 GRAINS

Pictured is the Speer Soft Point. Hunting bullets of this weight are also available from Winchester and Remington. Sierra makes a very excellent target bullet of this same weight. The 200 grain bullet offers maximum penetration for rifles such as the .308 which will not stabilize the heavier thirty caliber bullets.

220 GRAINS

Pictured is the Remington Soft Point. Similar bullets of this weight are also available from Hornady, Sierra and Winchester. In thirty caliber rifles which will handle this bullet weight, it is an excellent choice for maximum penetration on very large game.

.32/20 CALIBER (.310 Dia.)

80 GRAINS

Pictured is a Remington Hollow Point. This bullet is designed primarily for use in the 32/20 Winchester cartridge.

100 GRAINS

Pictured is a Remington Soft Point. This bullet is designed primarily for use in the 32/20 Winchester cartridge.

.303 CALIBER & 7.7mm (.311 to .313 Dia.)

150 GRAINS

Pictured is the Speer Soft Point. A similar bullet is also available from Hornady, Norma and Sierra. Nose shapes include Spitzers and Spire.

180 GRAINS

Pictured is a Remington Soft Point. Bullets of this weight are also available from Speer, Sierra and Winchester. A good bullet for maximum penetration in this caliber.

215 GRAINS

Pictured is a Remington Soft Point. This bullet despite its heavy weight, is not designed for extreme penetration. Due to its nose shape and jacket thickness it works well on deer and black bear.

.32 CALIBER (.319 to .321 Dia.)

170 GRAINS

Pictured is a Remington Hollow Point. Similar bullets are also available from Winchester, Hornady and Speer. Nose shapes include Round Nose and Flat Point. These bullets are designed primarily for 32 Win. Special velocities.

8mm (.322 to .323 Dia.)

125 GRAINS

Pictured is a Speer Spire Point. This bullet is designed primarily as a varmint bullet for the 8 x 57 M/M Mauser.

150 GRAINS

Pictured is the Speer Soft Point. Similar bullets are also available from Hornady and Sierra. Nose shapes include Spitzers and Spire Points.

170 GRAINS

Pictured is a Remington Soft Point. Similar bullets are also available from Hornady and Speer in Round Nose and Semi-Spitzer design. Round nose designs are an excellent choice for deer and black bear.

225 GRAINS

Pictured is the Speer Soft Point. This bullet is excellent where maximum penetration is desired.

.338 CALIBER (.338 Dia.)

200 GRAINS

Pictured is a Speer Soft Point. Bullets of this weight are also available from Hornady and Winchester. In the big magnum cartridges these bullets work well for long range shooting and thin skinned game.

225 GRAINS

Pictured is the Hornady Spire Point. The application of this bullet is basically the same as that of the 200 grain.

250 GRAINS

Pictured here is a Hornady Round Nose. This bullet weight is also available from Winchester in a silvertip design. The bullet is an excellent choice for all but the largest of big game.

275 GRAINS

Pictured here is a Speer Soft Point. A bullet of this same weight is also available from Hornady in a Round Nose design. These bullets are designed for maximum penetration and may be used on very large game such as grizzly and brown bear.

.348 CALIBER (.348 & .349 Dia.)

200 GRAINS

Pictured is a Remington Soft Point. This bullet weight is also available from Hornady in a Flat Point design.

220 GRAINS

Pictured is the Speer Soft Point. This bullet is designed for maximum penetration.

.351 CALIBER (.351 Dia.)

180 GRAINS

Pictured is the Remington Soft Point. This bullet is designed expressly for the Winchester .351 Self-Loader.

.35 CALIBER (.358 Dia.)

150 GRAINS

Pictured here is a Remington Pointed Soft Point. This bullet is designed for thin skinned game at moderate ranges. As it is a pointed bullet, it should not be used in rifles with tubular magazines.

200 GRAINS

Pictured is a Remington Soft Point. Similar bullets are available from Winchester, Norma and Hornady. Nose designs include Round Nose and Hollow Point. Pointed Soft Points are also available with heavier jackets for use in cartridges which have a higher velocity than the 35 Remington. In the 35 Remington, use the thinner jacketed bullets to insure positive expansion.

250 GRAINS

Pictured is a Remington Pointed Soft Point. Similar bullets are also available from Hornady, Speer, Norma and Winchester. Bullets of this weight are designed for cartridges which are in the ballistic class of the .358 Winchester. An excellent bullet weight for large game.

275 GRAINS

Pictured is a Hornady Round Nose. These bullets are primarily for use in magnum type cases when maximum penetration is desired.

.375 CALIBER (.375 Dia.)

235 GRAINS

Pictured is the Speer Soft Point. This is an excellent weight bullet for long range shooting on thin skinned game.

270 GRAINS

Pictured is a Remington Soft Point. Similar bullets of this weight are also available from Hornady and Winchester. The bullet weight is excellent for long range use and Round Nose versions work well on large game.

285 GRAINS

Pictured is a Speer Soft Point. This bullet is similar in performance to the 270 grain except that it is not as well suited for extreme ranges.

300 GRAINS

Pictured is a Hornady Round Nose. Similar bullets of this weight are also available from Remington and Winchester. A good bullet weight for moderate ranges when maximum penetration is desired.

.38 CALIBER (.376 Dia.)

255 GRAINS

Pictured is a Remington Soft Point, but a similar bullet is also available from Winchester. Both bullets are designed for the 38/55 Winchester cartridge.

.38/40 CALIBER (.400 Dia.)

180 GRAINS

Pictured is a Remington Soft Point, but a similar bullet is also available from Winchester. These bullets are designed for use in the 38/40 cartridge and may be used in either rifles or handguns which are chambered for this cartridge.

.44 CALIBER (.425 to .427 Dia.)

200 GRAINS

Pictured is a Remington Soft Point, but a similar bullet is also available from Winchester. These bullets are designed for use in the 44/40 cartridge and may be used in either rifles or handguns which are chambered for this cartridge.

.44 CALIBER (.429 to .431 Dia.)

225 GRAINS

Pictured is a Speer Half Jacketed Bullet. This bullet is designed for use in the 44 Magnum cartridge and may be used in either rifles or handguns which are chambered for this cartridge.

240 GRAINS

Pictured is a Remington Soft Point. A bullet of this weight is also available from Winchester in a Hollow Point design. These are the most desirable jacketed bullets for the 44 Magnum cartridge. They may be used in either rifle or pistol.

.45 CALIBER (.457 Dia.)

300 GRAINS

Pictured is a Hornady short jacket bullet. Suitable for deer at short range.

405 GRAINS

Pictured is a Remington Soft Point. A similar bullet is also available from Winchester. This is the standard jacketed bullet for the 45/70 cartridge. It may also be used on thin skinned game in the .458 cartridge.

500 GRAINS

Pictured is a Remington Full Patch. Bullets of this weight are also available from Winchester. They are intended for very large game such as brown bear, tiger, etc.

The bullet weights and dimensions listed here represent bullets cast from our number two alloy. Variations in blending the alloy, casting procedure and mould tolerance could lead to minor changes in these specifications.

The bullet weights listed are less gas checks. The average weight of Lyman gas checks are as follows:

.22 cal.	.75 grs.	.338 cal.	2.0 grs.
.243 cal. (6mm)	1.5 grs.	.348 cal.	4.5 grs.
.25 cal.	1.5 grs.	.35 cal. (.38 spec. & .357 cal.)	2.5 grs.
.264 cal. (6.5mm)	2.0 grs.	.375 cal.	3.5 grs.
.270 cal.	3.0 grs.	.41 cal.	5.0 grs.
.284 cal. (7mm)	4.5 grs.	.44 cal.	5.0 grs.
.30 cal. (.308 to .313)	3.0 grs.	.45 cal.	7.0 grs.
.32 cal. (8mm)	3.0 grs.		

ALL BULLETS ARE PICTURED ACTUAL SIZE

CAST LEAD ALLOY RIFLE BULLETS

.22 CALIBER (.224 Dia.)

37 GRAINS

Bullet #225107 — This bullet is designed for use with a gas check. It has one groove and a normal cast diameter of .226. It is best suited for use in the smaller 22 caliber cases.

44 GRAINS

Bullet #225438 — This bullet is designed for use with a gas check. It has three grooves and a normal cast diameter of .227. It is best suited for cases up to the .222 Remington Magnum.

49 GRAINS

Bullet #225415 — This bullet is designed for use with a gas check. It has two grooves and a normal cast diameter of .228. A accurate bullet in all 22 caliber cases.

57 GRAINS

Bullet #225462 — This Loverin design bullet is intended for use with a gas check. It has three grooves and a normal cast diameter of .226. It is best suited for use in the .222 Magnum or larger cases.

.22 CALIBER (.228 Dia.)

59 GRAINS

Bullet #228365 — Designed for use with a gas check, this bullet is best suited for the 22 Savage Hi-Power cartridge. It has three grooves and a normal cast diameter of .229.

78 GRAINS

Bullet #22835 — This plain base bullet has eight grooves and a normal cast diameter of .232. It is an excellent bullet for the 22 Savage Hi-Power.

.243 CALIBER & 6mm (.243 Dia.)

60 GRAINS

Bullet #244203 — This is a plain base bullet with three grooves and has a normal cast diameter of .248.

84 GRAINS

Bullet #245496 — A gas check, Loverin design bullet having five grooves and a normal cast diameter of .246. An excellent bullet for .243 and .244 cases.

93 GRAINS

Bullet #245497 — A gas check, Loverin design bullet having six grooves and a normal cast diameter of .247. A good bullet for .243 and .244 cases.

99 GRAINS

Bullet #245498 — A gas check, three groove bullet which has a normal cast diameter of .246. This bullet will not stabilize well in many of the 6mm rifles.

115 GRAINS

Bullet #244253 — A plain base eleven groove bullet which was originally designed for the Lee-Navy cartridge. It is difficult to obtain accuracy with this bullet in present day 6mm rifles.

.25 CALIBER (.257 Dia.)

67 GRAINS

Bullet #257420 — A gas check, two groove bullet which has a normal cast diameter of .259.

74 GRAINS

Bullet #257463 — A gas check, four groove bullet of Loverin design which has a normal cast diameter of .260. The bullet is usually very accurate.

89 GRAINS

Bullet #257312 — A gas check, three groove bullet which has a normal cast diameter of .259. This bullet is excellent for 25/20 and similar cartridges.

89 GRAINS

Bullet #257464 — A gas check bullet of Loverin design which has five grooves and a normal cast diameter of .260. This is an excellent bullet for most all of the 25 caliber rifles.

98 GRAINS

Bullet #257418 — A gas check bullet which has two grooves and a normal cast diameter of .258. It is a bit more difficult to obtain accuracy with this bullet than with those previously listed for the 25 caliber.

113 GRAINS

Bullet #257325 — A gas check, three groove bullet which has a normal cast diameter of .260. This is a good performer in 25/35 and 25 Remington cartridges.

.264 CALIBER & 6.5mm (.264 Dia.)

101 GRAINS

Bullet #266305 — A gas check, one groove bullet which has a normal cast diameter of .266.

119 GRAINS

Bullet #266324 — A plain base, two groove bullet which has a normal cast diameter of .268. This bullet was originally designed for the 6.5 Mann. Schoe. It is an excellent bullet for all 6.5 cases provided it is used at moderate velocity (under 1650 F.P.S.).

127 GRAINS

Bullet #266455 — A gas check, seven groove bullet of Loverin design which has a normal cast diameter of .267. This is an excellent bullet for all 6.5 cases and is usually very accurate.

141 GRAINS

Bullet #266469 — A gas check bullet of Loverin design which has six grooves and a normal cast diameter of .267. This is an excellent bullet for all 6.5 cases.

.270 CALIBER (.277 Dia.)

114 GRAINS

Bullet #280468 — A gas check bullet of Loverin design which has six grooves and a normal cast diameter of .283. A very accurate bullet.

125 GRAINS

Bullet #280473 — A gas check bullet having two grooves and a normal cast diameter of .282.

136 GRAINS

Bullet #280412 — A gas check bullet having two grooves and a normal cast diameter of .284. It is an excellent bullet for all .270 caliber cases.

.284 CALIBER & 7mm (.284 Dia.)

118 GRAINS

Bullet #287448 — A gas check bullet which has four grooves and a normal cast diameter of .288. This is an excellent bullet for the 7 x 57 Mauser and other 7mm cases.

135 GRAINS

Bullet #287346 — A gas check bullet having three grooves and a normal cast diameter of .288. A good bullet for most all of the 7mm's.

150 GRAINS

Bullet #287405 — A gas check bullet of Loverin design which has eight grooves and a normal cast diameter of .288. A very accurate bullet for all 7mm cases.

164 GRAINS

Bullet #287308 — A gas check bullet having two grooves and a normal cast diameter of .289. This bullet was originally designed for the .280 Remington but it works well in all 7mm cases.

175 GRAINS

Bullet #287221 — A plain base bullet having nine grooves and a normal cast diameter of .286. This bullet was originally designed for the 28/30/120 Stevens, but it works well in the 7mm's when a very heavy bullet is desired.

7.35mm (.299 to .301 Dia.)

146 GRAINS

Bullet #300136 — A gas check bullet having two grooves and a normal cast diameter of .302. This bullet is designed for the 7.35 Italian and it uses standard 7mm gas checks.

.30 & .31 CALIBER (.308 to .313 Dia.)

112 GRAINS

Bullet #311316 — A gas check bullet having two grooves and a normal cast diameter of .313. While this bullet was designed primarily for the 32/20 cartride, it will also work well in small capacity cases such as 30 M1 Carbine. Largest suggested sizing diameter is .311.

115 GRAINS

Bullet #3118 — A plain base bullet with two grooves and a normal cast diameter of .312. This bullet was designed primarily for the 32/20 cartridge. Largest suggested sizing diameter is .311.

115 GRAINS

Bullet #311359 — A gas check bullet having two grooves and a normal cast diameter of .312. This bullet was designed for use in small capacity cases. Largest suggested sizing diameter is .311.

131 GRAINS

Bullet #311410 — A plain base, two groove bullet which has a normal cast diameter of .313. This bullet is the best choice for the 30 M1 Carbine. Largest suggested sizing diameter is .311.

152 GRAINS

Bullet #311466 — A gas check, six groove bullet of Loverin design which has a normal cast diameter of .312. A very accurate 30 caliber bullet. Largest suggested sizing diameter is .311.

170 GRAINS

Bullet #311291 — A gas check, three groove bullet which has a normal cast diameter of .312. This is our most popular 30 caliber bullet. It is best suited for rifles which use a .308 sizing diameter. Largest suggested sizing diameter is .311.

173 GRAINS

Bullet #31141 — A gas check, three groove bullet which is very similar to #311291, but with a flat nose. It has a normal cast diameter of .311. Largest suggested sizing diameter is .309.

180 GRAINS

Bullet #311332 — A gas check, two groove bullet which has a normal cast diameter of .313. This bullet is very popular for 30/06 and .300 H & H cartridges. Largest suggested sizing diameter is .311.

180 GRAINS

Bullet #311407 — A gas check bullet of Loverin design, it has eight grooves and a normal cast diameter of .314. This bullet is very accurate in those 30 calibers which can handle a bullet of this weight. Largest suggested sized diameter is .312.

190 GRAINS

Bullet #311334 — A gas check bullet having two grooves and a normal cast diameter of .310. While the bullet was designed for the 30/40 Krag cartridge it works well in most other 30 caliber which can handle this bullet weight. Largest suggested sized diameter is .308.

202 GRAINS

Bullet #311299 — A gas check bullet having two grooves and a normal cast diameter of .314. An excellent bullet for the .303 British cartridge. Largest suggested sized diameter is .313.

210 GRAINS

Bullet #311290 — A gas check bullet having two grooves and a normal cast diameter of .311. This is an excellent heavy bullet for those 30 calibers which will handle this bullet weight. Largest suggested sized diameter is .309.

214 GRAINS

Bullet #311284 — A gas check bullet having three grooves and a normal cast diameter of .315. A very accurate heavy bullet for those 30 calibers which will handle this bullet weight. Largest suggested sizing diameter is .313.

.32 CALIBER (.320 Dia.)

134 GRAINS

Bullet #321427 — A gas check bullet having two grooves and a normal cast diameter of .322.

151 GRAINS

Bullet #321298 — A plain base bullet having three grooves and a normal cast diameter of .322.

161 GRAINS

Bullet #321317 — A gas check bullet having two grooves and a normal cast diameter of .323.

181 GRAINS

Bullet #321297 — A gas check bullet having three grooves and a normal cast diameter of .324. This bullet was originally designed for the 32 Winchester Special Cartridge.

8mm (.321 to .323 Dia.)

103 GRAINS

Bullet #32360 — A plain base bullet having two grooves and a normal cast diameter of .323.

115 GRAINS

Bullet #32359 — A plain base bullet having three grooves and a normal cast diameter of .324. This bullet is for use in 8mm cartridges, but it is also popular in 32/40 cartridges when the rifle has an oversized groove diameter.

165 GRAINS

Bullet #323470 — A gas check bullet of Loverin design having six grooves and a normal cast diameter of .321. A very accurate bullet.

243 GRAINS

Bullet #323378 — A gas check bullet having two grooves and a normal cast diameter of .323.

.338 CALIBER (.338 Dia.)

201 GRAINS

Bullet #338320 — A gas check bullet having two grooves and a normal cast diameter of .342.

247 GRAINS

Bullet #33889 — A gas check bullet having two grooves and a normal cast diameter of .341.

.348 CALIBER (.348 Dia.)

183 GRAINS

Bullet #350447 — A gas check bullet having two grooves and a normal cast diameter of .351. This bullet is our most popular bullet for the .348 Win. cartridge.

251 GRAINS

Bullet #350482 — A gas check bullet having three grooves and a normal cast diameter of .349.

.351 CALIBER (.352 Dia.)

167 GRAINS

Bullet #350319 — A gas check bullet having two grooves and a normal cast diameter of .352. This bullet was designed for the .351 Win. S.L. and uses .348 gas checks.

.35 CALIBER (.358 Dia.)

150 GRAINS

Bullet #358430 — A plain base bullet having two grooves and a normal cast diameter of .359. The bullet may be used in 35 caliber rifles or 38 Spec. and .357 handguns. A heavier version (195 grs.) is also available for rifles and handguns.

158 GRAINS

Bullet #358311 — A plain base, two groove bullet which has a normal cast diameter of .361. While this bullet was designed for the 38 special handgun cartridge, it works well in the 35 Remington rifle cartridge.

195 GRAINS

Bullet #358430 — A plain base bullet having three grooves and a normal cast diameter of .359. A lighter (150 gr.) version is also available.

204 GRAINS

Bullet #358315 — A gas check bullet having two grooves and a normal cast diameter of .360. This bullet was designed for 35 Remington and is very accurate.

232 GRAINS

Bullet #35897 — A gas check bullet having two grooves and a normal cast diameter of .359.

245 GRAINS

Bullet #358318 — A gas check bullet having two grooves and a normal cast diameter of .360. An excellent bullet for the .358 Winchester cartridge.

282 GRAINS

Bullet #3589 — A gas check bullet having three grooves and a normal cast diameter of .360.

.375 and .38 CALIBER (.375 Dia.)

249 GRAINS

Bullet #375248 — A plain base four groove bullet which has a normal cast diameter of .381.

264 GRAINS

Bullet #375449 — A gas check bullet having four grooves and a normal cast diameter of .377. This bullet is an excellent choice for the .375 H & H cartridge.

265 GRAINS

Bullet #375296 — A gas check bullet having four grooves and a normal cast diameter of .382. This bullet was originally designed for the 38/55 cartridge, but it works well in other 38 caliber rifles.

267 GRAINS

Bullet #375167 — A plain base bullet having three grooves and a normal cast diameter of .380. This bullet was originally designed for the 38/72 cartridge, but it is an excellent bullet for other 38 caliber cartridges.

38/40 CALIBER (.400 Dia.)

170 GRAINS

Bullet #40188 — A plain base bullet having two grooves and a normal cast diameter of .403. This bullet was designed for use in the 38/40 cartridge.

172 GRAINS

Bullet #40143 — A plain base bullet having two grooves and a round cast diameter of .403. This is our standard 38/40 bullet.

196 GRAINS

Bullet #40152 — A plain base bullet having two grooves and a normal cast diameter of .405.

.40 CALIBER (.400 to .408 Dia.)

212 GRAINS

Bullet #41028 — A plain base bullet having two grooves and a normal cast diameter of .411. An excellent bullet for the .401 Self Loader and may also be used in 41 Magnum Pistols.

240 GRAINS

Bullet #410426 — A plain base bullet having two grooves and a normal cast diameter of .411. An excellent bullet for the .401 Self Loader and may also be used in 41 Magnum Pistols.

288 GRAINS

Bullet #412263 — A plain base bullet having three grooves and a normal cast diameter of .413. This bullet was originally designed for the .405 Winchester cartridge.

.44 CALIBER (.424 to .431 Dia.)

205 GRAINS

Bullet #42798 — A plain base bullet having two grooves and a normal cast diameter of .432. This is our standard 44/40 bullet.

210 GRAINS

Bullet #429215 — A gas check bullet having two grooves and a normal cast diameter of .431. This is an excellent bullet for the .444 Marlin and may also be used in 44 Magnum Pistols.

232 GRAINS

Bullet #429360 — A plain base bullet having two grooves and a normal cast diameter of .430. Originally designed for the 44 Special cartridge this bullet is excellent for all 44 calibers.

245 GRAINS

Bullet #429244 — A gas check bullet of Thompson design having two grooves and a normal cast diameter of .434.

.45 CALIBER (.450 to .454 Dia.)

378 GRAINS

Bullet #457483 — A gas check bullet having three grooves and a normal cast diameter of .458. Originally designed for the 45/70 cartridge this bullet may also be used in the .458 Winchester.

385 GRAINS

Bullet #457124 — A plain base bullet having four grooves and a normal cast diameter of .460. This is our standard bullet for the 45/70, but it is also a good bullet for other 45 caliber rifles.

475 GRAINS

Bullet #457406 — A gas check bullet having four grooves and a normal cast diameter of .460. An excellent bullet for 45 caliber rifle cartridges.

545 GRAINS

Bullet #462560 — A gas check bullet having two grooves and a normal cast diameter of .463. A very good bullet for 45 caliber Magnum cases.

ALL BULLETS ARE PICTURED ACTUAL SIZE

JACKETED PISTOL BULLETS

.22 CALIBER (.222 Dia.)

40 GRAINS

Pictured is a Remington soft point. This bullet is designed primarily for the 22 Remington Jet cartridge.

Note — Bullets of .224 dia. for use in the 221 Fireball cartridge may be found under the Jacketed Rifle Bullet Listing.

.30 CALIBER (.222 Dia.)

85 GRAINS

The bullet pictured is a Remington full metal case. This bullet is designed for use in the .30 Mauser cartridge, but is also workable in the .30 Luger.

93 GRAINS

The bullet pictured is a Remington full metal case. Similar bullets of the same weight are available from Winchester and Norma. These bullets are designed for use in the .30 Luger cartridge.

71 GRAINS

The bullet pictured is a Remington full metal case. A similar bullet is also available from Winchester. Both bullets are designed for use in the .32 A.C.P. cartridges.

9mm (.354 Dia.)

124 GRAINS

The bullet pictured is a Remington full metal case which is designed for use in 9mm Luger cartridge.

.38 CALIBER (.355 Dia.)

95 GRAINS

The bullet pictured is a Remington full metal case. A similar bullet is also available from Winchester. While both bullets are designed for use in the .380 Auto cartridge they are also workable in the 9mm Luger.

130 GRAINS

The bullet pictured is a Remington full metal case, but a similar bullet is also available from Winchester. Both bullets are designed for use in the .38 A.C.P. and .38 Super Auto cartridge.

.38 CALIBER (.357 Dia.)

146 GRAINS

The bullet pictured is a Speer half jacket, hollow point which is designed for use in the .38 Special and the .357 Mag. cartridge. These bullets should not be used for loads which are lighter than those listed for they tend to shed their jackets in the barrel, when used at low velocity.

158 GRAINS

The bullet pictured is a Remington soft point. This is an excellent jacketed bullet for the .38 Special and the .357 Magnum cartridge.

160 GRAINS

The bullet pictured is a Speer half jacket which is designed for use in the .38 Special and .357 Magnum cartridge. These bullets should not be used with light loads or at low velocities as they tend to shed their jackets in the barrel when used at lower speeds.

.41 CALIBER(.410 Dia.)

210 GRAINS

The bullet pictured is a Remington soft point which is designed for use in the .41 Magnum cartridge.

.44 CALIBER (.429 to .431 Dia.)

(see Jacketed Rifle Bullet listing)

.45 CALIBER (.450 to .451 Dia.)

185 GRAINS

The bullet pictured is a Remington full metal case, Wad Cutter. A similar bullet is also available from Winchester. Both bullets are designed for use in the .45 A.C.P. cartridge.

230 GRAINS

The bullet pictured is a Remington full metal case. A similar bullet is also available from Winchester. They are designed for use in the .45 A.C.P. cartridge.

.45 CALIBER (.454 Dia.)

250 GRAINS

The bullet pictured is a Hornady half jacket which is designed for use in the .45 Colt cartridge. These bullets should not be used at low velocity as they tend to shed their jackets in the barrel when used at low speeds.

ALL BULLETS ARE PICTURED ACTUAL SIZE

CAST LEAD ALLOY PISTOL BULLETS

.22 CALIBER (.222 to .224 Dia.)

37 GRAINS

Bullet #225107 — This gas check bullet has one groove and a normal cast diameter of .226.

44 GRAINS

Bullet #225438 — This gas check bullet has three grooves and a normal cast diameter of .227. It is an excellent bullet for the .221 Rem. Fireball.

49 GRAINS

Bullet #225415 — This is a very accurate .22 caliber bullet which has two grooves and uses a gas check. It has a normal cast diameter of .228.

.30 & .32 CALIBER (.308 to .314 Dia.)

77 GRAINS

Bullet #311252 — This is a good bullet for the .32 A.C.P. cartridge. It has a plain base, two grooves, and a normal cast diameter of .313.

84 GRAINS

Bullet #313249 — This round nose bullet has a plain base and two grooves. It's normal cast diameter is .313.

84 GRAINS

Bullet #311227 — This round nose bullet has a plain base and two grooves. It's normal cast diameter is .313.

88 GRAINS

Bullet #311419 — This bullet uses a gas check, has one groove and a normal cast diameter of .314.

93 GRAINS

Bullet #313226 — This is a plain base bullet having two grooves and a normal cast diameter of .314.

9mm, .357 & .38 CALIBER (.354 to .360 Dia.)

75 GRAINS

Bullet #358101 — This bullet has a plain base and wad cutter design. It has two grooves and a normal cast diameter of .359. It is an excellent short range practice bullet for .38 and .357 revolvers.

92 GRAINS

Bullet #358242 — A round nose bullet with one groove and a normal cast diameter of .363. This is an excellent bullet for the .380 auto cartridge. (also available in 121 gr. weight).

112 GRAINS

Bullet #358425 — This is a wad cutter bullet having a plain base, 2 grooves and a normal cast diameter of .361. Due to its nose design it should not be seated flush with the case mouth.

121 GRAINS

Bullet #358242 — This round nose bullet has a plain base, two grooves and a normal cast diameter of .359. It is a good bullet for the 9mm Luger cartridge. (Also available in 92 gr. weight.)

121 GRAINS

Bullet #356402 — This bullet is our most popular choice for the 9mm Luger cartridge. It has a plain base, one groove and a normal cast diameter of .359.

133 GRAINS

Bullet #358480 — This semi-wad cutter bullet has a plain base, two grooves and a normal cast diameter of .361.

141 GRAINS

Bullet #358495 — This is a plain base bullet of wad cutter design. It has four grooves and a normal cast diameter of .360. The popularity of this particular bullet attests to its superb accuracy.

150 GRAINS

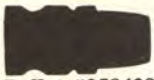
Bullet #358430 — This round nose bullet has two grooves and a normal cast diameter of .359. While it is basically a .38 caliber pistol bullet, it is sometimes used in the .35 Remington rifle cartridge.

155 GRAINS

Bullet #358156 — This is a gas check bullet of Ray Thompson's design. It has three grooves and a normal cast diameter of .360.

158 GRAINS

Bullet #358311 — This is our most popular 158 gr. .38 special bullet. It has a plain base, two grooves and a normal cast diameter of .360. The bullet may also be used in the 9mm Luger cartrridge.



168 GRAINS

Bullet #358429 — This is a plain base bullet of Elmer Keith design. It has two grooves, a normal cast diameter of .361 and is very accurate.

195 GRAINS

Bullet #358430 — This round nose bullet has a plain base, three grooves and a normal cast diameter of .359. It is also available in 150 gr. weight.

.38/40 CALIBER (.400 Dia.)

170 GRAINS

Bullet #40188 — This bullet was designed especially for the .38/40 cartridge. It has a plain base, two grooves and a normal cast diameter of .403.

172 GRAINS

Bullet #40143 — This is our most popular .38/40 bullet. It has a plain base, two grooves and a normal cast diameter of .403.

.41 CALIBER (.410 Dia.)

199 GRAINS

Bullet #41026 — This wad cutter bullet has a plain base, three grooves and a normal cast diameter of .414. It is very accurate.

212 GRAINS

Bullet #41032 — This bullet is a semi-wad cutter with a plain base and two grooves. It has a normal cast diameter of .411 and is an excellent choice for the .41 S & W Magnum.

212 GRAINS

Bullet #41028 — This round nose bullet has a plain base, two grooves and a normal cast diameter of .414.

215 GRAINS

Bullet #410610 — This is an excellent bullet for the .41 S & W Magnum. It is a gas check design having two grooves and a normal cast diameter of .412.

217 GRAINS

Bullet #41027 — This is a hollow base, wad cutter having five grooves and a normal cast diameter of .413.

240 GRAINS

Bullet #410426 — This round nose bullet has a plain base and two grooves. It has a normal cast diameter of .411 and is excellent for the .401 Win. or .41 S & W Magnum.

.44 CALIBER (.424 to .431 Dia.)

180 GRAINS

Bullet #429348 — This plain base, wad cutter has two grooves and a normal cast diameter of .432.

200 GRAINS

Bullet #429303 — This is a gas check bullet having two grooves and a normal cast diameter of .432.

205 GRAINS

Bullet #42798 — This is a plain base bullet having two grooves and a normal cast diameter of .432.

210 GRAINS

Bullet #429215 — This gas check bullet has two grooves and a normal cast diameter of .431. It is a very accurate bullet in most .44 caliber guns.

232 GRAINS

Bullet #429360 — This is a semi-wad cutter bullet having two grooves and a normal cast diameter of .430.

245 GRAINS

Bullet #429383 — This round nose bullet has a plain base, two grooves and a normal cast diameter of .432.

245 GRAINS

Bullet #429421 — This is a very accurate bullet of Elmer Keith's design. It has a plain base, two grooves and a normal cast diameter of .431.

245 GRAINS

Bullet #429244 — This is a gas check bullet having two grooves and a normal cast diameter of .434.

.45 CALIBER (.450 to .454 Dia.)

175 GRAINS

Bullet #45468 — This is a hollow base bullet having two grooves and a normal cast diameter of .456. It is a good, lightweight bullet for the .45 Colt cartridge.

185 GRAINS

Bullet #452389 — This is a plain base, wad cutter having two grooves and a normal cast diameter of .457.

200 GRAINS

Bullet #452460 — This is a semi-wad cutter having two grooves and a normal cast diameter of .454.

225 GRAINS

Bullet #452374 — This is our standard bullet for the .45 A.C.P. cartridge. It has a plain base, one groove and a normal cast diameter of .455.

235 GRAINS

Bullet #454309 — This is a plain base, wad cutter having three grooves and a normal cast diameter of .456.

238 GRAINS

Bullet #452423 — This is a very accurate bullet of Keith design. It has a plain base, two grooves and a normal cast diameter of .454.

250 GRAINS

Bullet #454190 — This is our standard bullet for the .45 Colt cartridge. It has a plain base, two grooves and a normal cast diameter of .457.

255 GRAINS

Bullet #454424 — This is a plain base bullet of Elmer Keith design. It is a very accurate bullet for the .45 Colt cartridge, has two grooves and a normal cast diameter of .457.

ACCURACY WITH JACKETED BULLETS

Before getting into the subject of accuracy in this chapter, it is necessary to qualify our terms. "Accuracy" means different things to different shooters. Its interpretation depends to a large extent upon the kind of shooting the individual is accustomed to — the type of rifle and cartridge he uses — and of course, the human factor — his ability as a marksman.

Whether it is loaded with factory ammo, or reloads, the trusty old deer rifle remains pretty much of a hunting weapon rather than a target gun. Lever action or pump action rifles may be perfectly adequate for hunting, but they will never shoot in the same accuracy class as bolt action target rifles. Nor will a reloaded 30/30 cartridge ever achieve the superior ballistics of, say, a .270 Winchester. Therefore, we are considering accuracy herein only as it pertains to improving the results of a given rifle or cartridge. No matter how accurate your rifle may be with a factory loaded round, it can be made more accurate by employing the reloading procedures as set forth in this accuracy chapter.

First, make a careful appraisal of your firearm. Sure, it may not have been intended for bench rest shooting, but, if it is maintained in the proper condition, it is capable of optimum accuracy only restricted by its design and caliber. A reasonably smooth trigger pull is a must. Sighting equipment should be of good quality and in top condition. Also, it may be wise to have a competent gunsmith check the headspace, screws, bedding, crowning, throat and bore. A little help from an expert can save you plenty of time, trouble and ammunition.

We suggest that you carefully slug your barrel to determine its exact groove diameter (See "Accuracy With Cast Bullets" chapter). If your groove is not of a standard size for which you are able to purchase the correct diameter jacketed bullets, then the accuracy potential of your rifle is limited before you start. If your groove diameter is on the tight side, it could produce dangerous pressures with the standard size jacketed bullet. For both safety and accuracy in non-standard groove rifles, we suggest the use of cast lead alloy bullets.

LOADING FOR ACCURACY WITH A JACKETED BULLET

It may be argued by some that, in this chapter, we should include such procedures as gauging flash holes for uniformity, measuring case volume and rotating bullets to insure their balance. However, we are covering only the loading procedures which our tests have shown have a definite bearing on the general accuracy of a load. In reloading, you may discover certain individual characteristics of your rifle which suggest to you slight variations in loading methods that seem to improve your accuracy. If so, by all means adopt them.

If you have established the safety of the load (as explained in the Pressure chapter), you do not need new cases for accuracy. The cases you do use, however, must be in good

condition, uniform in every way, of the same brand, and fired an equal number of times. Trimming is vitally important, and all cases must be trimmed to the exact same length.

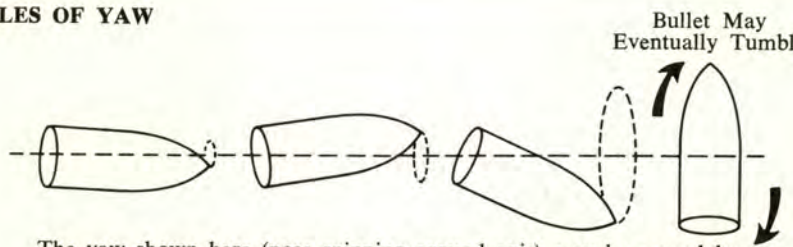
Contrary to the usually accepted procedure, we do not recommend that cases be neck resized only. Our tests indicate that neck-sizing in itself does not produce a noticeable increase in accuracy, while conventional full-length resizing does make a finished round that will chamber more freely. For consistency, it is recommended that you match your primer brand to your case brand — if possible.

The type of powder should be carefully selected. A good powder to start with is the one listed for the accuracy load in the Data section under your cartridge and bullet weight.

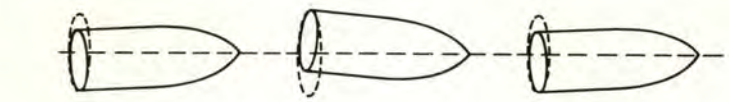
Weigh all of your charges carefully on a powder scale. If very slight variations in a particular powder charge seem to be critical to the accuracy of the load, try another powder. Chances are it will work better with your particular rifle and component combination.

As explained in the previous chapter on "Bullets", the weight, length and shape of the projectile are important to accuracy. The length of the bullet must be compatible to the rifling twist and velocity, or the bullet will become erratic in flight. When a bullet spins erratically, it is said to be yawing. The illustration following shows how and why a bullet yaws.

EXAMPLES OF YAW



The yaw shown here (nose spinning around axis) may be caused by a defect in the bullet, by imperfect crowning, or by a washed out bore.



The yaw shown here (base spinning around axis) may be caused by excessive velocity or the wrong combination of twist to bullet length. Bullets that yaw in this manner in early flight sometimes settle down and spin true as they lose velocity.

As bullets are never absolutely perfect in balance and weight, select only those which are the most uniform. Weigh the bullets carefully on a standard powder scale. Bullets that vary more than 1/2 grain (+ or —) from advertised weight should be rejected.

For the utmost in reloading accuracy, the use of three reloading dies is mandatory. A Three-Die Set differs from a Two-Die Set in that it contains a separate neck expanding

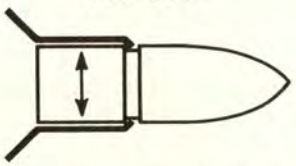
die. This die (Lyman "M" Die) is equipped with a 2-step expanding plug. The first step of the plug expands the neck of the cartridge to slightly under bullet diameter. The second step expands the first 1/16″ of the neck to slightly over bullet diameter, allowing the bullet to enter the case freely. The real advantage to this is that it insures precise "bullet pull" from shot to shot. Consistent bullet pull (tension of neck on seated bullet) is highly important to accuracy as each bullet must release with exactly the same amount of pressure if your shots are to remain consistent. The following illustration shows a standard Three-Die Rifle Set which features 2-step neck expanding.

LYMAN STANDARD THREE-DIE SET

- Full-Length Resizing and Decapping
- 2-Step Neck Expanding
- Bullet Seating and Crimping
- Die Adjusting Wrench

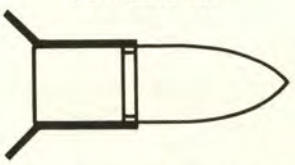
Careful seating of the bullet is also important for accuracy. With a Three-Die Set the bullet can be started into the case neck with your fingers. This is a great help as the bullet can now be aligned visually before it enters the seating die. Operate the press handle slowly and with care. Be certain that the seating die is locked tightly in adjustment. For accuracy loading, **do not use** the crimping feature of the die. Seat the bullets friction tight only. Crimping is actually harmful to consistent bullet pull for two reasons: 1. It is nearly impossible to crimp each case exactly the same each time. 2. The pressure used in crimping has a tendency to bulge the case neck away from the bullet. In most instances, crimping actually loosens the bullet in the neck and lightens bullet pull (see illustration).

CRIMPED



While Bullet Will Not Move Forward or Backward, It May Be Rocked Sideways.

UNCRIMPED



Most Uniform Bullet Pull Is Afforded When The Neck Walls Are Tight Against The Bullet.

To obtain perfection in seating a jacketed bullet when loading a bottle-neck rifle case, we suggest the use of a Lyman P-A* (precision alignment) bullet seating die. These dies are available for most all bottle-neck cartridges and they contain a sliding inner sleeve which holds the bullet and neck of the case in consistent alignment throughout the seating operation.

*NOTE. At the present time the P-A Die is not offered for sale in a Three-Die Set. We would advise those who are interested, to purchase the Lyman Two-Die Deluxe Rifle Set and make a separate purchase of a "M" neck expanding die. When used in combination, these three dies will produce the best possible results with bottle-neck cases and jacketed bullets.

EXCEEDING MAXIMUM OVERALL LENGTH

Throughout this Handbook we have tried to emphasize the importance of adhering to maximum chamber dimensions. We have stated that a bullet which is set too far forward (exceeding the maximum overall cartridge length) will boost pressures, and indeed it will. Understanding, however, and a cautious approach does allow us certain latitudes. There are times, in the interests of accuracy, when the Handloader can exceed the maximum overall length listed. With some rifles (particularly those chambered for the .257 Roberts) it is necessary to set the bullet well forward if we are to obtain our best accuracy. Some rifles have a long chamber throat and give their best results when the bullet is seated just short of touching the rifling.

The reader must realize that seating bullets in this manner does have its effect on chamber pressure. In order to do it safely, requires that the handloader establish his seating depth and then work up this charge slowly as explained in the "Pressure" chapter. Also, it should be realized that cartridges loaded in this manner will not normally function through the magazine of the rifle. They are usually too long. If the load is accurate, however, it does have an application for single shot, varmint and target work and for these purposes it is sometimes done.

To accomplish this, make up a dummy round (less powder and primer). Start a bullet a short distance into the case neck. Now, chamber this cartridge in your rifle. As you close the bolt the bullet will be seated into the case just far enough so that it touches the rifling. Of course, we can't leave the bullet in this position, but at least we know where the rifling is in relation to the bullet.

Remove the dummy round from the rifle and insert it into your bullet seating die. Adjust the seating stem of your die so that the bullet is seated about 1/32″ **deeper** in the case than it was when it came from the rifle chamber. Remember! you have just created a pressure condition which must be compensated for by working up the load slowly and carefully.

For further information on this subject, we recommend that you also read the "Accuracy With Cast Bullets" chapter which contains data that will be equally helpful in loading jacketed bullets.

ACCURACY WITH CAST BULLETS

You should study the two preceding chapters ("Bullets" and "Accuracy With Jacketed Bullets") before reading this chapter because much of the information therein, which is not repeated in this chapter, also pertains to cast bullet shooting.

As explained in the "Bullets" chapter, the cast bullet must be restricted to a more moderate velocity than its jacketed counterpart because the cast bullet is constructed of softer metal. Even bullets of #2 alloy are not considered as hard in comparison with the strength of some jacketed bullets. The shape or design of the cast bullet is to some extent indicative of its potential accuracy. Because the bullet is soft, it requires design features that will afford the most positive alignment in the throat and bore.

In developing loads for this Handbook, we fired some 20,000 cast bullets of various designs and calibers. With the exception of shotgun slugs and muzzle loading bullets, #2 alloy was used exclusively. All bullets were sized to groove diameter or as near to groove diameter as possible. Overall tests results were excellent and in most instances the cast bullets gave better accuracy than jacketed bullets when used in the same rifle or pistol. **Leading of the bore was never experienced** in all of our testing.

The best results of our extensive testing were used in determining the suggested loads and bullet designs which are listed in the Data Section of this Handbook. Generally, bullets with blunt or round noses were found to be the most accurate. While a great many pointed bullets shoot well, the bullet must be of a design that has a relatively short ogive. Such bullets have their greatest weight mass bearing directly on some portion of the rifling which gives the bullet maximum alignment in the throat and bore of the rifle.

The following illustration will further clarify our test results with various cast bullet design. Although some shooters may have experienced good results with a long ogive bullet in a particular rifle, our text is based on the results of testing **many** rifles with **many** bullet designs. We are stating the rule rather than the few exceptions.

These four shapes are basic to cast bullet design. Actual bullets may vary to some extent, but, generally, they fall into one of these four categories.

1 & 2. (IDEAL DESIGNS) Bullets that conformed to either of these general shapes performed very well in our testing. Due to their short ogive, the greatest weight mass bears on some portion of the rifling. The driving bands bear directly on the groove, while the nose acts as a pilot to align the bullet in the throat and bore.

3. (LOVERIN DESIGN) Bullets having this general shape performed extremely well in all of our testing. Due to their short ogive, the greatest weight mass bears directly on the groove. While the design does not always provide for a section of the bullet to bear on the lands, the many driving bands of groove diameter keep them well aligned.

4. Bullets of this general shape proved to be the worst performers in our testing. Their long flowing ogives leave a large portion of the bullet unsupported by the rifling. Cast bullets of this general shape can easily mis-align themselves as they enter the throat and bore.

While the foregoing illustration deals primarily with cast bullets designed for use in rifles, the same fundamentals apply to pistol bullets. Pistol bullets, however, are all basically wad cutters in their design, and you would be hard pressed to find a cast pistol bullet with other than a short ogive.

BLENDING ALLOYS INTO BULLET METAL

Throughout this Handbook, the exclusive use of #2 alloy is recommended for rifle and pistol loads. (Use pure lead for shotgun slugs and muzzle loading bullets). We consider this relatively hard bullet material essential for cast bullet accuracy. If they are designed correctly and driven at the proper velocity, bullets of #2 alloy are sufficiently tough so that they will not become deformed in the throat and bore. As these bullets do not expand readily, the purchase of hollow point moulds is suggested for making hunting bullets.

Several formulas for blending metals to make #2 alloy are listed in the "Bullets" chapter. Again, blending is important because, if it is not done properly, the bullet material will not be consistent and one bullet will contain more or less tin, etc., than another.

Besides the necessary alloy materials, a few inexpensive tools are also needed, such as: a lead pot, a lead dipper, a simple ingot mould. The kitchen stove (gas or electric), or a torch can be used to melt down the lead alloy. However, the heat source must be capable of heating the material to a temperature of about 800° and maintain it pretty constantly. A thermostatically controlled electric furnace (The Lyman Mould Master) is also available. An electric furnace, while it adds greatly to the ease and convenience of making bullets, is not essential.

Lyman Lead Pot

Lyman Ingot Mould

Lyman Lead Dipper

After the correct proportions of the various alloys are placed into the pot, or furnace, they are melted down, fluxed, stirred and poured into the ingot mould. This supplies you with small 1½″ x 3″ bars of bullet metal to use later in your casting. When melting and blending your bullet metal, follow the same procedure and use the same care as when preparing metal for the mould. If the same temperature requirements and fluxing, stirring, etc., are not adhered to, the blend of the metals and bullet material will be inconsistent. The most common mistake in bullet casting is improper blending of the metal. If the tin content is not up to par, the bullets will lead the bore.

LYMAN MOULD MASTER FURNACE

A thermostatically controlled electric furnace adds greatly to the speed, ease and convenience of making bullets.

PREPARING METAL FOR THE MOULD

MELTING AND FLUXING

Place several ingots of bullet metal into your pot, or furnace, and heat them to about 750°. A Lyman Electric Furnace, due to its adjustable thermostat, allows you the best control of the metal temperature. If you are using some other heat source, however, you can play it by ear. Heat the metal for about twenty or thirty minutes until it becomes liquified and flows freely. It is then ready for fluxing.

As the metal melts, a gray scum will rise to the surface contrasting sharply with the quick-silver brightness of the molten lead. DO NOT REMOVE THIS SCUM. This is tin, the most valuable component of the bullet metal. Tin, being lighter, will tend to float to the top of the mixture. Fluxing will recombine the tin-lead-antimony mixture. This operation is extremely important and it must be followed carefully!

To flux the metal, merely drop a small bit of tallow, beeswax, or bullet lubricant into the mixture. A smokey gas will rise from the top of the pot and this gas should be immediately ignited with a match. This will eliminate the smoke. Stir the mixture with the dipper, working the floating tin through the molten lead. As you stir, hold the dipper so the cup side is down and raise it out of the metal with each stirring stroke. This scoops air into the mixture and helps the flux.

Metal that has been properly fluxed will take back the tin, leaving the surface almost mirror bright and flecked with small particles of black and brown impurities. Skim off and discard these impurities. Always flux the metal, after adding to the pot, or whenever, by its appearance, it seems to need it. Remember, you cannot overdo this fluxing operation. While the dipper is not in use, it should be left in the molten metal to keep it hot.

CASTING BULLETS

After the metal has been fluxed, and is hot enough to pour easily through the dipper, it is ready for casting. In addition to the mould, you should have on hand a hardwood stick (about 10″ long) to be used for opening the mould. Also, pad a small area of your bench with an old piece of cloth material. This will soften the fall of the hot bullets as they drop from the mould, and prevent them from being damaged.

While there is no set way to cast good bullets, we do offer the following as a suggested method. Fill the dipper half full of metal and place the spout of the dipper against the pouring hole as shown in "A" of the following illustration. Holding the mould and dipper together, slowly turn them into a vertical position with the dipper on top of the mould as pictured in "B."

A

B

The extra metal that runs over the top of the mould is called sprue. When it hardens, which takes only several seconds, pick up the hardwood stick and tap the sprue cutter sharply. This will separate the sprue from the base of the bullet. Drop the sprue into a cardboard box, or other receptacle. Open the mould and let the bullet fall to the pad. If the bullet does not drop out readily, use the stick to rap the hinge rivot sharply, as shown in the illustration. Use only wood for this purpose and never strike the mould blocks themselves.

If Bullet Does Not Drop Readily, Strike The Hinge Rivot.

As the mould will be cool, your first bullets will be imperfect. Casting bullets, one after the other, will bring the mould to the proper temperature. If you wish, the mould can be preheated by placing it on the rim of your furnace, or along side your lead pot on the stove. Never, under any circumstances, dunk the mould in the molten metal!

Wrinkled bullets indicate that the mould, and/or metal, is too cool. Frosted bullets indicate that the mould, and/or metal, is too hot. Good bullets should be clean, sharp, and fill the mould. Imperfect bullets should be collected and, along with the sprue, returned to the pot.

1. GOOD BULLET — TEMPERATURE CORRECT
2. WRINKLED BULLET — TEMPERATURE TOO COOL
3. FROSTED BULLET — TEMPERATURE TOO HOT

Bullets selected for accuracy shooting should be carefully weighed on the reloading scale. This reveals air pockets that may have formed in the bullet, lightening or unbalancing it. The actual weight of your bullets will depend pretty much on the consistency of your alloy material, and it may vary slightly from lot to lot. Weigh about twenty or thirty bullets out of each group and determine an average bullet weight. Reject any bullets that vary more than ½ grain (+ or —) of this weight. Rejected bullets may be saved and recast at a future date.

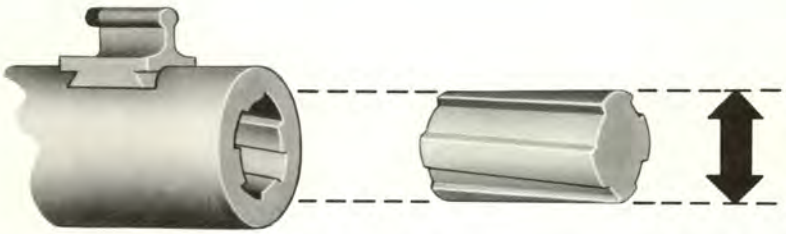
DETERMINING YOUR BULLET DIAMETER

SLUGGING YOUR BARREL

Before you can expect much in the way of accuracy from your rifle or handgun, you must make sure that the sized diameter of the cast bullet is correct for your particular firearm. Tolerance ranges being as broad as they are (particularly with older guns or those of foreign make), we suggest slugging the barrel to ascertain the exact bullet size.

Slugging the barrel is really quite simple, but it does require a little care and patience if it is to be done correctly. First, make up a soft lead slug which is slightly larger than the groove size of the firearm. This can be a lead bullet that you have expanded in a vise, or just a piece of soft lead whittled to size. The slug is carefully tapped into the muzzle of the firearm and then driven all the way through the barrel with a suitable rod (such as a cleaning rod). Do not use a thin cleaning rod as it will penetrate the slug and become lodged in the bore. Use a rod that is wide enough to drive the slug ahead of it. After the slug has been carefully tapped through the barrel, it will be perfectly engraved and clearly marked by both the lands and the groove.

With a micrometer, measure the slug across its widest diameter (see illustration). This is the groove diameter of your firearm and the proper sized diameter for your cast bullet. Your bullet sizing die should correspond as closely as possible to this dimension.

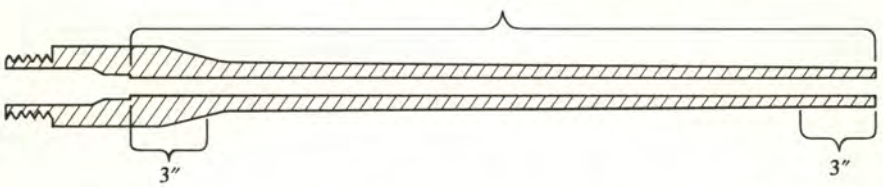


With a micrometer, measure the diameter of this slug at its WIDEST POINT. This is the groove diameter of your rifle.

If the barrel is in poor condition, or, if it has a worn throat or muzzle, chances are that it will not be very accurate with any size bullet. To shoot well, the barrel must have a consistent groove diameter from one end to the other. While there is little you can do to correct a poor barrel, at least you should be aware of your problems before you start.

To check for a worn (belled) muzzle, drive another slug about 3″ into the end of the barrel and return it by driving it back out. Do not drive this slug all the way through. Also check the throat by driving another slug (from breech) to about 3″ past the chamber and then return it. With a micrometer, measure the groove diameter of both of these slugs and compare their dimension to that of the slug which you drove through the barrel. If all three slugs agree, then your barrel has a consistent diameter throughout its length, and you may expect good results from cast bullets of this size.

Driving a soft lead slug through the barrel will determine its groove diameter. This is also the proper sized diameter for your cast bullet.



A soft slug driven about 3″ past the chamber and then returned, will check the throat diameter. If the diameter of this slug is larger than the one driven through the barrel, the throat is worn.

A soft slug driven about 3″ past the muzzle and then returned will check the muzzle diameter. If the diameter of this slug is larger than the one driven through the barrel, the muzzle is worn.

CHOOSING A BULLET SIZING DIE

After you have determined the exact bullet size, you will need a bullet sizing die (G, H & I) of this diameter, or as near to it as possible. Lyman bullet sizing dies have been newly designed to supply a swaging rather than a shearing action in reducing bullet diameter. The mouth of the "H" die contains a gentle taper which allows the gas check and bullet to start into the die easily. The exact tolerance and ultra-smoothness of the hardened inner chamber completely eliminates shearing of lead and produces a perfectly cylindrical bullet. As this swaging action compresses and work-hardens the alloy, it does not reduce the bullet weight, but leaves it tougher, smoother and more accurate.

IDEAL BULLET LUBRICANT
was used exclusively throughout our cast bullet testing.

"G" TOP PUNCH
Order by bullet number.

"H & I" SIZING ASSEMBLY
Order by groove diameter.

The Lyman #45 Lubricator and Sizer

When equipped with the proper G, H & I Dies, this tool supplies the leverage to size your bullets to the correct diameter. It will also force lubricant under pressure into the bullet grooves. Lyman Ideal Bullet lubricant is moulded specifically to fit the reservoir of this machine. For complete price information, see Lyman catalog.

COMPLETE LIST OF H & I DIAMETERS

.222	.223	.224	.225	.226	.228	.243	.244	.245	.257	.258	.259	.263
.264	.266	.277	.278	.280	.284	.285	.287	.299	.301	.308	.309	.310
.311	.312	.313	.314	.315	.316	.318	.319	.320	.321	.322	.323	.325
.338	.340	.348	.350	.352	.354	.355	.356	.357	.358	.359	.360	.366
.375	.377	.378	.379	.380	.386	.400	.401	.403	.406	.410	.412	.414
.419	.424	.425	.427	.428	.429	.430	.431	.434	.439	.446	.450	.451
.452	.454	.456	.457	.459	.509	.512	.515	.580 (lub. only)				

MULTI OR SHALLOW-GROOVE RIFLING

Throughout our testing of cast bullets, we had difficulty with one type of rifling that proved to be somewhat incompatible to cast bullet shooting. This was the "Multi", or what is commonly known as "Shallow-Groove" rifling. While jacketed bullets performed exceptionally well when fired from these rifles, cast bullets had a tendency to keyhole when fired from the same barrels. To prevent the cast bullets from stripping and to eliminate the keyholing, we were forced to reduce their velocity to under 1600 F.P.S. in shallow groove barrels.

You will find that the maximum velocity loads shown in the cast bullet Data are in most cases workable only with firearms having standard type rifling. If your rifle has a shallow-groove barrel, we recommend that you stay with the suggested starting loads for best results. Some military rifles of .303 British caliber which have extremely shallow grooves are also encountered. While these rifles are not multi-grooved, their shallow grooved barrels will necessitate the same reduction in cast bullet velocity.

USING THE PROPER DIES

When loading cast bullets for either rifle or pistol, the use of a Three-Die Set is mandatory. A Three-Die Set differs from a Two-Die Set in that it contains a separate neck expanding die. This die (Lyman "M" Die) is equipped with a 2-step expanding plug. The first step of the plug expands the neck of the cartridge case to slightly under bullet diameter. The second step expands the first 1/16″ of the neck to slightly over bullet diameter, allowing the cast bullet to enter the case freely without shaving lead and ensuring consistent bullet pull.

In the previous chapter ("Accuracy With Jacketed Bullets"), we cover the need for consistent bullet pull and the benefit of not crimping the bullet into the case. The same applies to cast bullets and perhaps even more so. Each bullet must release with exactly the same amount of pressure if your shots are to remain consistent. If you can get away without crimping, by all means do so. Of course, you have no choice with some cartridges for their heavy recoil, or the magazine style of the firearm, requires that a crimp be used.

LYMAN STANDARD THREE-DIE SET

- Full-Length Resizing and Decapping
- 2-Step Neck Expanding
- Bullet Seating and Crimping
- Die Adjusting Wrench

UNDERSTANDING VELOCITIES

It is sometimes mistakenly assumed that the velocities of reloaded ammunition do not compare favorably with the ballistics of factory ammunition. Factory advertised velocities tend to support this assumption. However, you must bear in mind that barrel lengths do affect ballistics. In many cases the factory figures were obtained in much longer barrels, than those in common use.

The following listing shows the actual chronographed velocities obtained with factory loaded ammunition in our test firearms. Variations can occur in different barrels of the same length. Slight variations also occur with different lots of ammunition from a given manufacturer.

Velocities shown were obtained at fifteen feet from the muzzle.

RIFLE

CALIBER	BULLET WEIGHT IN GRAINS	BRAND	VELOCITY F.P.S.	BARREL LENGTH IN INCHES
.22 HORNET	45	WINCHESTER	2702	26
.218 BEE	46	WESTERN	2860	26
.222 REMINGTON	50	WINCHESTER	3205	24
.223 REMINGTON	55	REMINGTON	3067	20
.222 REMINGTON MAGNUM	55	REMINGTON	3154	24
.225 WINCHESTER	55	WINCHESTER	3413	22
.224 WEATHERBY MAGNUM	50	WEATHERBY	3787	26
.224 WEATHERBY MAGNUM	55	WEATHERBY	3717	26
.22/250 VARMINTER	55	REMINGTON	3650	24
.220 SWIFT	48	REMINGTON	3984	26
.22 SAVAGE HI-POWER	70	REMINGTON	2624	20
.243 WINCHESTER	80	REMINGTON	3257	22
.243 WINCHESTER	100	REMINGTON	2906	22
.244 REMINGTON	75	REMINGTON	3247	22
.244 REMINGTON	75	REMINGTON	3436	26
.244 REMINGTON	90	REMINGTON	3003	22
.244 REMINGTON	90	REMINGTON	3134	26
6mm REMINGTON	100	REMINGTON	3086	22
.25/20 WINCHESTER	60	WINCHESTER	2044	20
.25/20 WINCHESTER	86	WINCHESTER	1283	20
.256 WINCHESTER	60	WESTERN	2747	24
.250/3000 SAVAGE	87	REMINGTON	3030	24
.250/3000 SAVAGE	100	REMINGTON	2816	24
.257 ROBERTS	87	WINCHESTER	3058	24
.257 ROBERTS	100	WINCHESTER	2688	24
.257 ROBERTS	117	REMINGTON	2590	24
.257 WEATHERBY MAGNUM	87	WEATHERBY	3731	26
.257 WEATHERBY MAGNUM	100	WEATHERBY	3546	26
.257 WEATHERBY MAGNUM	117	WEATHERBY	3322	26
6.5mm JAPANESE	139	NORMA	2272	19
6.5mm JAPANESE	156	NORMA	1901	19
6.5mm ITALIAN	156	NORMA	2262	21
6.5x54mm MANNLICHER-SCHOENAUER	139	NORMA	2450	20
6.5x54mm MANNLICHER-SCHOENAUER	156	NORMA	2341	20
6.5x55mm SWEDISH	139	NORMA	2631	18
6.5x55mm SWEDISH	156	NORMA	2320	18
6.5mm REMINGTON MAGNUM	120	REMINGTON	2808	18½
.264 WINCHESTER MAGNUM	100	WESTERN	3460	24

RIFLE (Continued)

CALIBER	BULLET WEIGHT IN GRAINS	BRAND	VELOCITY F.P.S.	BARREL LENGTH IN INCHES
.264 WINCHESTER MAGNUM	140	WINCHESTER	2958	24
.270 WINCHESTER	100	REMINGTON	3279	22
.270 WINCHESTER	130	WINCHESTER	3164	22
.270 WINCHESTER	150	REMINGTON	2762	22
.270 WEATHERBY MAGNUM	100	WEATHERBY	3802	26
.270 WEATHERBY MAGNUM	130	WEATHERBY	3322	26
.270 WEATHERBY MAGNUM	150	WEATHERBY	3144	26
7mm MAUSER	175	WINCHESTER	2538	29
.284 WINCHESTER	125	WESTERN	3095	22
.284 WINCHESTER	150	WESTERN	2793	22
.280 REMINGTON	125	REMINGTON	3174	22
.280 REMINGTON	150	REMINGTON	2695	22
.280 REMINGTON	165	REMINGTON	2732	22
7x61mm SHARPE & HART	160	NORMA	2932	24
7mm REMINGTON MAGNUM	150	REMINGTON	3058	24
7mm REMINGTON MAGNUM	175	REMINGTON	2890	24
7mm WEATHERBY MAGNUM	139	WEATHERBY	3184	26
7mm WEATHERBY MAGNUM	154	WEATHERBY	3164	26
.30 M1 CARBINE	110	WINCHESTER	1953	18
.30 REMINGTON	170	WINCHESTER	2105	22
.303 SAVAGE	190	WESTERN	1934	26
.30/30 WINCHESTER	150	REMINGTON	2325	21
.30/30 WINCHESTER	170	WINCHESTER	2217	21
.300 SAVAGE	150	WINCHESTER	2659	22
.300 SAVAGE	180	REMINGTON	2336	22
.308 WINCHESTER	110	REMINGTON	3154	22
.308 WINCHESTER	125	WINCHESTER	3030	22
.308 WINCHESTER	150	REMINGTON	2785	22
.308 WINCHESTER	180	REMINGTON	2525	22
.308 WINCHESTER	200	WINCHESTER	2398	22
.30/40 KRAG	180	REMINGTON	2288	22
.30/40 KRAG	220	REMINGTON	2061	22
.30/06	110	REMINGTON	3184	22
.30/06	125	WINCHESTER	3174	22
.30/06	150	REMINGTON	2865	22
.30/06	180	REMINGTON	2652	22
.30/06	220	REMINGTON	2347	22
.300 H & H MAGNUM	180	REMINGTON	2873	26
.300 H & H MAGNUM (MATCH)	180	REMINGTON	2881	26
.300 H & H MAGNUM	220	WINCHESTER	2550	26
.300 WINCHESTER MAGNUM	150	WINCHESTER	3247	24
.300 WINCHESTER MAGNUM	180	WINCHESTER	3048	24
.308 NORMA MAGNUM	180	NORMA	3115	24
.300 WEATHERBY MAGNUM	150	WEATHERBY	3559	26
.300 WEATHERBY MAGNUM	180	WEATHERBY	3164	26
.300 WEATHERBY MAGNUM	220	WEATHERBY	2906	26
7.62mm RUSSIAN	180	NORMA	2570	24
7.65mm ARGENTINE	150	NORMA	2958	29¼
.303 BRITISH	180	WESTERN	2433	25
.303 BRITISH	215	REMINGTON	2183	25
7.7mm JAPANESE	130	NORMA	2967	25
7.7mm JAPANESE	180	NORMA	2500	25
7.7mm JAPANESE	215	NORMA	2197	25
.32/20 WINCHESTER	80	WESTERN	2079	24½
.32/20 WINCHESTER	100	WINCHESTER	1278	24½
.32/40	165	WESTERN	1284	20
.32 REMINGTON	170	WINCHESTER	2141	22
.32 WINCHESTER SPECIAL	170	WINCHESTER	2262	20
8mm MAUSER	170	REMINGTON	2331	23
.338 WINCHESTER MAGNUM	200	WINCHESTER	2958	24
.338 WINCHESTER MAGNUM	250	WINCHESTER	2631	24
.338 WINCHESTER MAGNUM	300	WINCHESTER	2421	24

RIFLE (Continued)

CALIBER	BULLET WEIGHT IN GRAINS	BRAND	VELOCITY F.P.S.	BARREL LENGTH IN INCHES
.340 WEATHERBY MAGNUM	200	WEATHERBY	3115	26
.340 WEATHERBY MAGNUM	210	WEATHERBY	3040	26
.340 WEATHERBY MAGNUM	250	WEATHERBY	2730	26
.348 WINCHESTER	200	REMINGTON	2469	24
.351 WINCHESTER	180	PETERS	1835	20
.35 REMINGTON	150	REMINGTON	2369	20
.35 REMINGTON	200	REMINGTON	1992	20
.358 WINCHESTER	200	WINCHESTER	2544	22
.358 WINCHESTER	250	WINCHESTER	2150	22
.350 REMINGTON MAGNUM	200	REMINGTON	2680	18½
.350 REMINGTON MAGNUM	250	REMINGTON	2433	18½
.358 NORMA MAGNUM	250	NORMA	2808	24
.375 H & H MAGNUM	270	WINCHESTER	2680	24
.375 H & H MAGNUM	300	REMINGTON	2590	24
.378 WEATHERBY MAGNUM	270	WEATHERBY	3058	26
.378 WEATHERBY MAGNUM	300	WEATHERBY	2824	26
.38/55 WINCHESTER	255	REMINGTON	1221	26
.38/40 WINCHESTER	180	REMINGTON	1190	20
.401 WINCHESTER	200	REMINGTON	2262	20
.44/40 WINCHESTER	200	REMINGTON	1181	24
.44 REMINGTON MAGNUM (JACKETED)	240	REMINGTON	1766	20
.444 MARLIN	240	REMINGTON	2415	24
.45/70 GOVERNMENT	405	WINCHESTER	1326	32½
.45/70 GOVERNMENT	405	REMINGTON	1312	26
.458 WINCHESTER MAGNUM	510	WINCHESTER	2070	22
.460 WEATHERBY MAGNUM	500	WEATHERBY	2583	26

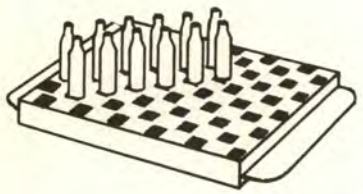
PISTOL

CALIBER	BULLET WEIGHT IN GRAINS	BRAND	VELOCITY F.P.S.	BARREL LENGTH IN INCHES
.22 REMINGTON JET	40	REMINGTON	1937	6
.221 REMINGTON FIREBALL	50	REMINGTON	2570	10 13/16
.30 LUGER	93	REMINGTON	1136	3¾
.30 MAUSER	85	REMINGTON	1174	5½
.32 A.C.P.	71	REMINGTON	825	3
.32 SMITH-AND WESSON	88	REMINGTON	600	3
.32 SMITH AND WESSON LONG	98	WINCHESTER	667	3
.32 SMITH AND WESSON LONG	98	REMINGTON	650	3
9mm LUGER	124	REMINGTON	1096	4
.357 MAGNUM (LEAD)	158	REMINGTON	1388	5
.380 AUTO.	95	REMINGTON	982	5
.38 A.C.P.	130	REMINGTON	975	5
.38 SUPER AUTO	130	REMINGTON	1149	5
.38 SPECIAL	148	WESTERN	766	6
.38 SPECIAL	150	WESTERN	1015	6
.38 SPECIAL	158	REMINGTON	826	6
.38 SPECIAL	200	WESTERN	703	6
.38 SMITH & WESSON	146	REMINGTON	731	4
.41 SMITH & WESSON MAGNUM (LEAD)	210	REMINGTON	989	6
.41 SMITH & WESSON MAGNUM (JACKETED)	210	REMINGTON	1398	6
.44 SPECIAL	246	REMINGTON	697	5½
.44 REMINGTON MAGNUM (JACKETED)	240	REMINGTON	1379	6½
.45 A.C.P.	185	REMINGTON	822	5
.45 A.C.P.	230	WINCHESTER	877	5
.45 AUTO RIM	230	REMINGTON	740	6½
.45 COLT	250	REMINGTON	790	5½

RELOADING ACCESSORIES

Every hobbyist, whether he is an amateur radio operator, photography bug, or reloader, likes to accumulate an impressive array of tools. In most cases extra equipment adds up to a faster or better job. In all cases it certainly makes sense to eliminate the little inconveniences which fall into the category of work. If some tricky little tool takes the work out of a job, but leaves all the fun, then why not buy it?

Reloading offers the hobbyist a good many accessory items which can be added to the basic tools pictured earlier in this Handbook. Some of these tools such as a case length gauge and case trimmer will be necessary if you are to continue reloading to any advanced degree. To make the reader aware of these items and to explain their function, we offer the following text and illustrations.

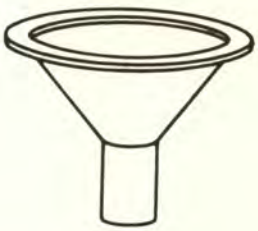


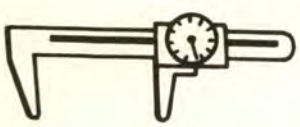
LOADING BLOCKS

These blocks are made of either plastic or wood and they are used to support empty, primed cases while charging them with powder. The use of these blocks not only speeds up reloading and prevents spillage of powder, but inasmuch as they provide a better order to your reloading bench, they help to eliminate the possibility of double charging a case.

POWDER FUNNEL

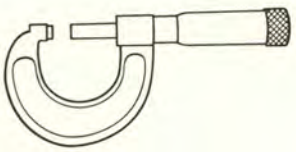
Every reloader should use a powder funnel. This inexpensive tool insures that all of the powder in the charge enters the case. Spilled granuals of powder not only detracts from the accuracy of our loading, but they eventually present a fire hazard if left laying around our bench.





CASE LENGTH GAUGE

Some accurate method of measuring or gauging case length is eventually required by every reloader. A vernier caliper, 4″ long or longer is an extremely efficient tool for measuring cases. A good vernier may be purchased at most any hardware store or you can use one of the case length gauges made for this purpose. Whatever you use, however, must be accurate.

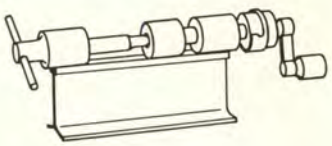


MICROMETER

A one inch micrometer is certainly a handy tool for measuring bullet diameter, head expansion, etc. It will not replace a good vernier however. A good vernier can be purchased for the price of a poor micrometer and it has a wider range of uses.

CASE TRIMMER

This item is used to trim cases back to a length which is compatible with the gun chamber (see case chapter). Some type of case trimmer will eventually be needed by every reloader. Many tools are available and we suggest that you visit your local reloading tool dealer and ask to see his selection.

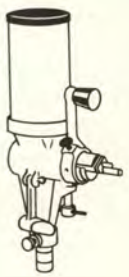


AUTO PRIMER FEED

Here is an attachment that most reloaders will eventually obtain. Its function is to feed primers automatically into your reloading press. This eliminates the separate handling of each primer and speeds up the reloading operation tremendously

POWDER MEASURE

Perhaps a better name for a powder measure is powder dispenser for it dispenses rather than measures powder. When used in conjunction with a powder scale, this is an excellent item. The measure is set, checked with the scale to insure its accuracy, and then used to meter out charges one after another. About every tenth round the measure should be rechecked with the powder scale.



PRIMER FLIPPER

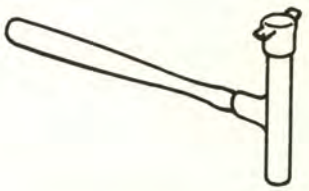
This is an amazing little tool which can save a lot of time in handling primers. It flips over primers so that they all lay in one direction (either base up or down). The tool is particularly handy when loading primers into a primer feed tube.

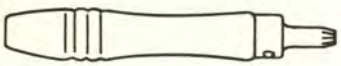
POWDER TRICKLER

This is an excellent item which is used in conjunction with a powder scale and sometimes a powder measure. The purpose of the Trickler is to control the flow of small amounts of powder into the scale pan. With a Trickler, you can add a few granuals of powder at a time and carefully bring the scale into balance. Sometimes a powder measure is set up to throw an under-weight charge. The charge is then dumped into the scale pan and brought into exact balance by adding powder from the Trickler.

BULLET PULLERS

There are several types of bullet pullers on the market. One of these tools is handy for the reloader who sometimes finds it necessary to remove bullets from live cartridges. The bullet puller allows you to salvage components without damage.



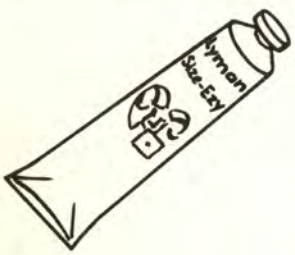


PRIMER POCKET REAMER

All reloaders who intend to use government cartridge cases should purchase one of these tools. The tool is used to clean out and remove the crimp from primer pockets on cases which originally had crimped-in primers.

SHELL CHAMFERING REAMER

The chamfering reamer is used to cut a slight taper on the case mouth. This allows for easier and smoother bullet seating. Cases are chamfered only once (after the first firing). They need not be chamfered at each reloading.



SIZE-EZY LUBRICANT

A suitable case lubricant is necessary to prevent cases from sticking in the resizing die. Lyman "Size-Ezy" was formulated specifically for this purpose. Remember, a little lubricant goes a long way, so use it sparingly. Also, wipe cartridges free of lubricant before firing.

GLOSSARY OF TERMS

Anneal: The process of altering the structure of any metal so as to relieve its working stresses and increase its ductility. See "Case" chapter in reference section for brass annealing.

Anvil: A metallic part of the primer. The blow from the firing pin crushes the priming mixture against the anvil causing ignition. See "Primer" chapter in reference section.

Ball: In military nomenclature this term refers to the bullet.

Ball Powder: This is a trade name for a double base smokeless powder developed by Olin Industries. It has a spherical or flattened spherical shape.

Ballistics: The science of projectiles in motion.

Ballistic Coefficient: Ratio of the sectional density of a bullet to its coefficient of form. Represents the projectiles ability to overcome the resistence of the air in flight .

Battery Cup: A type of primer used in shotshells which makes use of an outside cup to support it in the case. See "Primer" chapter in reference section.

Bearing Surface: That portion of the bullet surface which bears on or touches the bore.

Bell: To open the mouth of a case slightly in order to seat a bullet more easily. Also used in reference to a rifle barrel which is worn at the muzzle (belled muzzle).

Belted: A band which is formed into the head of some cases (magnum type) to strengthen the case and headspace the cartridge. See "Case" chapter in reference section.

Berdan: A common European priming system which makes use of an anvil formed in the case itself. See "Primer" chapter in reference section.

Boattail: A bullet design having a tapered base.

Bore: The inside diameter of a barrel before the rifling is cut.

Boxer: A common American primer named after Colonel Boxer. See "Primer" chapter in reference section.

Bullet: That portion of the cartridge which becomes a projectile when in flight. See "Bullet" chapter in reference section.

Burning Rate: A term which is used to describe the rapidity with which a given powder will burn. The term itself is a relative one based on a comparison with other powders. See "Powder" chapter in reference section.

Caliber: The approximate diameter of a bullet, or bore, expressed in decimals of an inch in English. In Europe where the metric system is used, this measurement is expressed in millimeters.

Cannelure: A groove (or grooves) cut around the circumference of a bullet. These grooves are normally used to hold bullet lubricant or to provide room or friction for crimping.

Case: The metal, plastic or paper container which holds all of the components of a round of ammunition.

Cast Bullet: Bullets for rifle or pistol which are cast from lead alloy. See "Bullet" chapter in reference section.

Center Fire: Refers to a cartridge having a centrally located primer in its base.

Chamber: That part of the bore at the breech which is formed to accept and support the cartridge.

Chamfer: To ream a taper on the inside of a case mouth.

Charge: The amount of powder used in the case at each loading. Also refers to the amount of shot used in a shotshell.

Choke: A constriction at the muzzle of a shotgun barrel designed to control the spreading of shot.

Chronograph: An instrument used to measure the velocity of a bullet.

Compressed Charge: A charge of powder which so nearly fills the case that it is compressed when the bullet is seated.

Components: Any of the various parts which go into the making of a cartridge.

Corrosion: The eating away of the bore by rust or chemical action.

Crimp: The bending inward of the case mouth to grip the bullet. With shotshells the term applies to the closure at the case mouth.

Crimped Primer: A forcing inward of the brass around the top of the primer pocket. This is frequently found on military cartridges and it is done to prevent set-back of primers. The crimp must be removed before repriming the case.

Drams Equivalent: Term used to indicate the approximate velocity of a shot charge by a comparison. See "Shotshell Ballistics and Tips" following Shotshell Data.

Drift: Deviation of a projectile from the line of departure due to its rotational spin or the force of wind.

Drop: The distance a projectile falls, calculated from the line of departure.

Double Base Powder: Smokeless powder made with nitroglycerine and nitrocellulose base.

Duplex Load: The use of two different powders in loading the same cartridge. It is not recommended and can be dangerous.

Energy: A projectiles capacity for doing work at a given range, expressed in foot-pounds.

Erosion: The wearing away of the bore due to friction.

Fireform: Reforming or changing the shape of a cartridge case by firing it in a chamber of the desired shape.

Flash Hole: A hole leading from the primer pocket to the inside of the case. See "Case" chapter in reference section.

Foot-Pound: A unit of kinetic energy equal to the effort required to raise a one pound weight, to a height of one foot, against the normal pull of gravity.

Freebore: The distance in the barrel, if any, which the bullet travels before it contacts the rifling. Some barrels are purposely relieved to allow the bullet considerable free movement before it strikes bore rifling.

Gas Check: A gilding metal cup which is used to protect the base of a cast lead alloy bullet from the burning effects of powder gase.

Gilding Metal: A copper-zinc alloy used for bullet jackets and gas checks.

Grain: A unit of weight measure. 437.5 grains equal one ounce.

Grooves: Spiral cuts in the bore of a firearm which cause the bullet to spin as it moves through the barrel.

Hangfire: Delayed ignition.

Headspace: The distance from the bolt face to that part of the chamber which acts as a stop and prevents the cartridge from moving forward. Also applies to the cartridge case. See "Pressure" and "Case" chapters in reference section.

Heel: The outer edge of the bullet base.

Hollow Point: A bullet design which features an axial hole at the point. The purpose of the hole is to aid expansion on impact.

Ignition: The action of setting the powder charge on fire.

IMR: Abbreviation for "Improved Military Rifle".

Jacket: The covering or skin of a bullet.

Keyhole: The imprint of a bullet which struck sidewise on target, rather than point first.

Lands: The raised portion of the rifling.

Line of Sight: An imaginary straight line from the eye, through the sights, to the point of aim.

Loading Density: Ratio of the volume of the powder charge to the volume of the case.

Mercuric Primer: A primer in which the priming mixture contains mercury.

Metal Case: A type of bullet which except for a small opening at the base, is completely encased in a jacket.

Mid-Range Trajectory: Refers to the distance the bullet raises above the line of sight. Mid range trajectory is calculated halfway between the muzzle and the target.

Minute-of-Angle: A unit of angular deviation equal to 1/60th of a degree. For practical purposes it is usually approximated as equal to one inch at 100 yards.

Misfire: The failure of a cartridge to fire after the primer is struck.

Muzzle: The front end of a barrel.

Muzzle Energy: See "Energy"

Muzzle Velocity: See "Velocity"

Neck: The forward portion of a cartridge case which grips the bullet. See "Case" chapter in reference section.

Neck Size: To resize only the neck portion of a case.

Non-Corrosive: Usually refers to primers having a priming mixture which is free of corrosive compounds.

Ogive: Refers to the nose shape of a bullet. The radius of the curve of a bullet nose.

Powder: The propellent material used in most firearms. May be divided into two basic types: "Smokeless" powder and "Black" powder.

Pressure: The force exerted by a burning charge of powder in the chamber of a firearm. Expressed normally in pounds per square inch. See "Pressure" chapter in reference section.

Primer: A small metal cup containing the detonating mixture which is used to ignite the propellent powder. See "Primer" chapter in reference section.

Primer Pocket: The cavity in the base of a cartridge which receives and supports the primer.

Round: A military term meaning one single cartridge.

Round Nose: A bullet design which features a rounded nose.

SAAMI: Abbreviation for Small Arms and Ammunition Manufacturers Institute.

Seating Depth: The depth to which a bullet is seated below the case mouth.

Sectional Density: A bullet's weight, in pounds, divided by the square of its diameter in inches.

Swage: To form by forcing into or through a die.

Throat: That area of the bore immediately ahead of the chamber.

Trajectory: The path of a projectile in flight.

Velocity: The speed at which a projectile travels. Usually measured in feet per second at a given range.

Wad Cutter: A bullet design which features a sharp shoulder. Designed to cut a clean round hole in a paper target.

Web: That portion of a cartridge case between the bottom of the primer pocket and the interior of the case. See "Case" chapter in reference section.

Work-Harden: Brass becomes harder as it is worked. See "Case" chapter in reference section, also "Annealing".

X-Ring: Center of a target. Bulls-eye.

Yaw: The action of a projectile spinning erratically around its own axis. See "Accuracy with Jacketed Bullets" in reference section.

Zero: The range at which a firearm will hit the point of aim.

Catalog Section

While we have illustrated only a few of the many products which make up the Lyman line, we would like you to send for our complete 44 page catalog. Please fill out and mail the enclosed card for your free copy. All prices are subject to change without notice.

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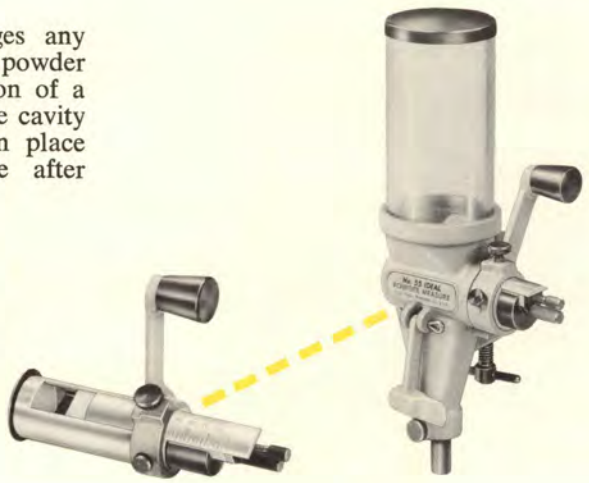

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