

INTRODUCTION

(To be written – possibly use family/deer hunting/deer camp/heritage and legendary accuracy of Remington Model 700)

SECTION 1: CENTERFIRE RIFLES

Opening

(To be written)

Types of Actions

Choice of a centerfire rifle should be based on both practical and personal considerations. From a practical viewpoint, the rifle should be matched to its intended use—species and size of game to be hunted, expected ranges, type of terrain, appropriate caliber and accuracy requirements. From a personal point of view, rifle choice should also involve your own preferences for the way it fits, feels, functions and fires—as long as these remain compatible with practical needs. Here are the four most commonly used rifle action types.

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Please click on each rifle for additional information

Bolt Action

Take a moment to become familiar with the most important parts of a bolt-action rifle. Using your mouse, rollover and click on the different parts of this rifle. When you're finished, click the green arrow button in the control menu to continue.

Parts: (Please add/modify parts information as needed)

Stock, Ejection Port, Chamber, Rear Sight, Front Sight, Safety Mechanism, Trigger, Trigger Guard, Magazine Latch, Magazine Assembly, Fore-end, Barrel, Muzzle, Receiver, Bolt Assembly, Bolt Handle, Bolt stop Release, Magazine Floor Plate (definitions to be written)

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Over the years, the Remington bolt-action rifle has been called "The best whitetail deer rifle in America." Virtually every hunter who has ever handled one has whole-heartedly agreed. Its compact length and superb balance is absolutely unbeatable in dense hardwoods of the South and Northeast. ~~Note: Incorporate this paragraph with opening comments which written.~~

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With bolt action rifles (like the Remington Model 700) cartridges are fed into the chamber from a blind magazine, or a detachable magazine as the bolt is closed. After firing, the shooter will then open the bolt to extract and eject the fired cartridge. Closing the bolt again will cycle another cartridge and the gun will be ready to fire a follow up shot.

Take a moment to try this yourself. Click on the trigger to see how this works. When you are finished, click the green arrow button in the control menu to continue.

The mechanical simplicity of the bolt-action rifle provides durability, dependability and the strength to handle modern calibers including magnum loads. Its accuracy can often be refined to match benchrest target shooting standards. The bolt action is used for everything from fast-handling lightweight carbines (like the Remington Model Seven) to heavy barrel varmint and target rifles. The bolt action rifle is one of the most accurate of the centerfire rifle types due to consistent lock up of the cartridge in the chamber of the gun and extremely fast lock times. Lock time is the time between the moment you pull the trigger and the time the firing pin hits the cartridge.

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Pump Action

Take a moment to become familiar with the most important parts of a pump action rifle. Using your mouse, rollover and click on the different parts of this rifle. When you're finished, click the green arrow button in the control menu to continue.

Parts: (Please add/modify parts information as needed)

Stock, Ejection Port, Rear Sight, Front Sight, Safety Mechanism, Trigger, Trigger Guard, Magazine Latch, Magazine Assembly, Fore-end, Barrel, Muzzle, Receiver (definitions to be written)

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With pump action rifles (like the Remington Model 7600) cartridges are fed from the magazine into the chamber and then ejected by the back-and-forth pumping of the fore-end assembly.

Take a moment to try this yourself. Click on the trigger to see how this works. When you are finished, click the green arrow button in the control menu to continue.

The "pump gun" is very versatile and often preferred for its simple, reliable, compact design, and fast second shot capability.

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Deleted: The pump-action rifle features a Quick-release magazine and Remington's rotary bolt lock-up design for exceptional strength, safety and hallmark reliability.¶

The pump action rifles are designed for ultra-fast follow-up shots without ever having to unshoulder your rifle. The pumping action required to cycle another round does not interfere with the natural sight plane of the gun.

Autoloading Action

Take a moment to become familiar with the most important parts of an autoloading action rifle. Using your mouse, rollover and click on the different parts of this rifle. When you're finished, click the green arrow button in the control menu to continue.

Parts: (Please add/modify parts information as needed)

Stock, Ejection Port, Operating Handle, Rear Sight, Front Sight, Safety Mechanism, Trigger, Trigger Guard, Magazine Latch, Magazine Assembly, Fore-end, Barrel, Muzzle, Receiver (definitions to be written)

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With autoloading action rifles (like the Remington Model 7400) the first cartridge is manually inserted into the chamber and the action is closed by depressing the bolt release. A magazine or clip is fed into the receiver which contains additional cartridges. After firing, the autoloading mechanism then extracts and ejects the fired cartridge and feeds a new cartridge into the chamber.

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Take a moment to try this yourself. Click on the trigger to see how this works. When you are finished, click the green arrow button in the control menu to continue.

Autoloaders are sometimes inappropriately called "automatics." The more appropriate term is "semi-automatics" due to the fact that the trigger must be released between shots. Due to the speed of the autoloading feature, autoloaders are extremely popular among deer hunters and generally deliver less "felt" recoil.

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Lever Action

Lever action guns were popular in the old west, and are often associated with cowboy action shooting, though many hunters still use the lever action rifle for hunting today.

With the lever action gun, cartridges are loaded into a magazine tube or blind magazine. Cartridges are then fed into the chamber by the use of the lever which when pulled opens the chamber and feeds a shell from the magazine and cocks the hammer. When the lever is pushed to its closed position the cartridge is locked in the chamber, and ready to fire. After firing, the lever opens the chamber, extracts and ejects the shell and loads another cartridge.

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Three other less common types of Centerfire rifles are:

Break Action

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Break Action guns are extremely rare and were often used for big game Safari hunters of the past. Break actions tend to appeal to certain hunting purist who enjoy the challenge of a single or double shot at their prey.

Break Action rifles come in single barrel, or double barrel configurations. Double barrel rifles can be configured in side by side or over and under just like shotguns. These guns have also been configured in combination barrels with one rifle barrel and one shotgun barrel.

Falling Block

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Falling Block rifles generally feature a lever which drops the back of the chamber (block) so a single cartridge can be inserted. When the lever is returned to its original position the block is closed and the gun is ready to fire. All Falling Block rifles are single shot.

Rolling Block

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Like the Lever Action, Rolling Block rifles were common in the old west, and they are still used today for long range shooting and certain target competitions.

Like Breach Block rifles, Rolling Block rifles are also single shot.

With Rolling Block rifles, the shooter first pulls the hammer to cock the action, and make way to open the chamber, then the shooter depresses a small lever on the top of the gun which opens the rear of the chamber or the Rolling Block, so named because the Block rolls down out of the way. In order to fire the gun, a single cartridge is inserted and the rolling block closed. The shooter repeats the process to manually extract the cartridge and load another.

Barrels

The barrel of a rifle is the tube through which a bullet is fired. Inside the rifle's barrel, grooves are cut into the metal. This is called rifling, a term which gives the firearm its name. The metal left between grooves is called a land. It is the lands which slightly grip (bite into) the bullet to give it the correct spin or spiral as it goes through the barrel. Spinning makes the bullet go straighter and farther, not unlike a correctly passed football. This helps stabilize the bullet, to prevent the bullet from tumbling and/or from flying sideways on its way to the target.

The amount of spin applied to a bullet as it travels down a barrel is optimized, by the factory, for the caliber and the typical bullet weights that are used in the firearm. The rate of spin imparted on a bullet by the barrel is generally referred to as the Rate of Twist, and is usually stated as a ratio, for example 1 in 14" would mean the bullet turns once as it travels 14" in the barrel.

Edit Note: can you show a football being thrown end over end and then with a spiral.

Action Length (previously Receiver/Bolt)

The Action is the combination of the receiver and bolt, together with the other parts of the mechanism by which a firearm is loaded, fired and unloaded.

Generally, rifles are broken down into three different action lengths depending on the cartridge selected; a short action length will handle cartridges such as the 223 Remington, 243 Winchester, 7mm-08 Remington and 308 Winchester; a long action length will handle 270 Winchester, 280 Remington, 30-06 Springfield, and 7mm Remington Magnum; and a magnum action length will handle the larger and longer magnum cartridges such as 375 H&H.

Edit note: Can show picture to illustrate short action vs long action receivers

The different action lengths usually provide for different weights, so that a short action firearm will weigh a bit less than the long, and so on. The shorter action rifles will also provide for a shorter bolt travel distance during the cycling of the firearm.

Deleted: Non-Remington Models (Do this need to be covered in our 'Basics' course?)

Single Shot / Break Action
(information needed)

Lever Action
(information needed)

Rolling Block -
(Do you need this much information? What should we cover here?)

Original Rolling Block rifles are once again available from Remington in two versions, the Sporter, and a Silhouette competition rifle. The Sporter combines a 30-inch round barrel with a pistol-gripped sporter stock of American walnut with sharp-cut checkering on both fore-end and butt-stock. Both barrel and receiver have a polished, blued finish. The barrel is fitted with an adjustable, center-notch buckhorn rear sight and a front blade sight chambered for the .45-70 Government smokeless powder cartridge, with 1 turn in 16". This latest page from our history creates over-the-counter availability of a genuine Remington Rolling Block rifle for collectors and tradition-minded hunters and shooters. .

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(What 'types' are you referring to in your outline?)

Stocks

(Is it necessary to have a section on stocks? Do you want to describe the different types of stocks – wood, kevlar, synthetic, mannlicher? If so, please provide necessary information.)
~~Pat: rifle~~
~~Karl: I would like to show various stock types – wood, kevlar, Mannlicher, etc.~~

The stock is wooden or composite (such as nylon or fiberglass) component to which a barreled action is attached to enable the shooter to hold the firearm. A properly fitted stock will help put your eye quickly in line with the sights, allow you to hold your aim steady, and will absorb a portion of recoil when a shot is fired. Most modern stocks will have a soft plastic or rubber butt plate to help absorb some of the recoil.

Today's stock choices depend upon shooter preference, and end use. One hunter may select a composite stock for durability and weather resistance, while another hunter may choose a wooden stock for the traditional look of wood. Stocks tend to be an often overlooked part of the shooting equation. Stocks should properly fit the shooter to ensure the shooter's dominant eye is perfectly aligned with the sights as the shooter mounts the firearm.

Sights

A sight is any of a variety of devices, mechanical or optical, designed to assist in aiming a firearm. There are two basic types of rifle sights: open and scopes. Both are mounted on top of the barrel.

Please click on each sight for additional information, then click the green arrow button in the control menu to continue.

Open sights

Open sights come in two parts. There is a blade, bead, or post at the muzzle end of the barrel. This is the front sight. The rear sight is a plate, ring, bar, or strip of metal on the top rear of the barrel or receiver. It will have a square, "V", or "U" notch cut in its top or in the case of peep sights a small hole. Some open rear sights are called leaf sights. These have hinges and can be raised for more accurate aiming. Open style rear sights can be moved to change where your bullet will hit the target. If you want the bullet to hit the target more right, move your rear sight to the left. Sights may also be raised or lowered on a ramp to raise or lower bullet impact. To shoot higher you would adjust the rear sight.

Scopes

Scopes, also known as telescope sights, do not use a front sight. Your aiming sight is inside the scope. It is called the reticle. Most scope sights use a post, post and crosshair, crosshairs, or crosshairs and dot as aiming points. Scopes make the image of your target and the surrounding area appear closer to you. The degree of the enlargement is called power. Power is stated as 2X for two times as large as normal, 4X for four times as large as normal, and so on. A scope mount allows the scope to be directly attached to the rifle.

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How to sight in a rifle

(To be written using 'Sighting-In with Remington Extended Range Rifle Ammunition' brochure
Please let us know if this is the correct information for this section.)

1. Getting Started (to be written)
2. Rough Sighting (to be written)
3. Short-range sighting
4. Long-range sighting
5. Tips for sharper sighting

Loading and Unloading

Please click on each rifle to view the steps involved in the loading and unloading of that particular firearm.

Bolt Action

>>To LOAD: chamber and magazine:

1. Point the firearm in a safe direction.
2. Put the safety mechanism in the 'S' position.
3. Raise the bolt handle.
4. Pull the bolt handle all the way back.
5. Push cartridges of the correct caliber, one at a time, into the magazine until it is fully loaded. Keep the bullets aligned toward the chamber.
6. Put one cartridge into the chamber.
7. Use your fingers to push the cartridges in the magazine all the way down. Slowly slide the bolt assembly forward so that the bolt slides over the top of the cartridges in the magazine.
8. Push the bolt handle down.
9. To fire the firearm put the safety in the 'F' position.

Editor Note: Add process for loading with a magazine.

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(Do we need to know how to unload models with a floor plate vs. models without a floorplate vs. models with a detachable magazine box? Can we cut this down?)

>>To UNLOAD: models with a floor plate:

1. Point the muzzle of the firearm in a safe direction.
2. Put the safety mechanism in the 'S' position.
3. Raise the bolt handle.
4. Put one hand over the top of the ejection port.
5. Slowly pull the bolt handle rearward with your other hand to remove the cartridge from the chamber.
6. Hold cartridge and remove it from the firearm.
7. Put your hand under the floor plate.

8. Push the floor plate latch to release the floor plate. The magazine spring and follower will be released from the magazine.
9. Remove released cartridges.
10. Push in the magazine follower, then close the floor plate.

>> To UNLOAD: models without a floor plate:

1. Repeat Steps 1 through 6 on "unloading with a floor plate"
2. Keep the muzzle pointed in a safe direction. Push the bolt handle slowly forward until the cartridge is released from the magazine.
3. Pull the bolt handle fully back and remove the cartridge from the ejection port.
4. Repeat Steps 2 and 3 until the magazine is empty.

NOTE: If the bolt is pushed all the way forward and a cartridge slides into the chamber, the gun can be fired. Normally, the cartridges will slide out of the chamber when the bolt is pulled back. If the cartridge remains in the chamber, point the muzzle in a safe direction, slide the bolt forward all the way and push the bolt handle down to close the bolt. Then repeat Steps 1 through 4.

>> To UNLOAD: models with a detachable magazine box:

1. Point the firearm in a safe direction.
2. Put the safety mechanism in the 'S' position.
3. Raise the bolt handle.
4. Put one hand over the top of the ejection port.
5. Slowly pull the bolt handle rearward with your other hand to remove the cartridge from the chamber.
6. Depress both latches or one latch to release magazine box.
7. Remove all the cartridges from the magazine box.
8. Replace the magazine box.

Autoloading

>> To LOAD: the chamber and magazine

1. Point the firearm in a safe direction.
2. Engage the safety mechanism. The red band will not show.
3. Pull the operating handle fully rearward until the action is held by the magazine follower.
4. Put one cartridge of the correct caliber through the ejection port and into the chamber.
5. Keep your fingers away from the ejection port and operating handle.
6. Push the bolt release to close the action.
7. Push the magazine latch forward and pull the magazine from the receiver.
8. Push four cartridges of the correct caliber one at a time into the magazine. Keep the bullets aligned toward the chamber.
9. Replace the magazine into the firearm.
10. Make sure the magazine is fully latched into position.
11. To fire the firearm, disengage the safety mechanism. The red band will now be showing.
12. The firearm will fire each time the trigger is pulled until the magazine and chamber are empty.

>> To UNLOAD the firearm:

1. Point the firearm in a safe direction.

2. Engage the safety mechanism. The red band will not show.
3. Push the magazine latch forward and pull the magazine from the firearm.
4. Pull the operating handle rearward to remove the cartridge from the chamber.
5. Remove the cartridges from the magazine.
6. Replace the magazine and open the action.

Pump action

>> To LOAD the chamber and magazine:

1. Point the firearm in a safe direction.
2. Engage the safety mechanism. The red band will not show.
3. Pull the fore-end fully rearward to open the action.
4. Put one cartridge of the correct caliber through the ejection port and into the chamber.
5. Push the fore-end forward to close the action.
6. Push the magazine latch forward and pull the magazine from the receiver.
7. Push four cartridges of the correct caliber one at a time into the magazine. Keep the bullets aligned toward the chamber.
8. Replace the magazine into the firearm.
9. Make sure the magazine is fully latched into position.
10. To fire the firearm disengage the safety mechanism. The red band will now be showing.

>> To UNLOAD the firearm:

1. Point the firearm in a safe direction.
2. Engage the safety mechanism. The red band will not show.
3. Push the magazine latch forward and pull the magazine from the firearm.
4. Pull the fore-end slowly rearward until the front of the shell is even with the ejection port.
5. Lift the front of the shell outward and remove from the ejection port.
6. Remove the cartridges from the magazine.
7. Replace the magazine and open the action.

Lever Action

1. Point the firearm in a safe direction.
2. Engage the safety mechanism.
3. Push cartridges of the correct caliber, one at a time, into the magazine until it is fully loaded. (Note: only use round head bullets in the tube magazines, as the use of pointed bullets can cause the ignition of rounds in the magazine.)
4. Open and close the action lever and cycle a cartridge into the receiver.
5. To fire the firearm disengage the safety.

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Additional Features

ExtronX

The firearms and ammunition of the future is here now. The ExtronX System is the most significant advancement in rifle and ammunition performance since smokeless powder. For the first time, cased centerfire cartridges are fired by a completely non-mechanical system that ignites primers by

means of an electrical pulse. Ignition is virtually instantaneous. And the result is, accuracy that many never thought possible.

The electronic fire control has no moving parts other than the trigger. No sear to be released. No firing pin to strike the primer. Instead, an internal electrical circuit sends a charge through the system to a new electrically responsive primer. Closing the bolt on the cartridge establishes contact between the firing pin and the primer. When the trigger is pulled, the electronic circuit sends an electrical pulse through the firing pin directly to the primer. This all happens in less than the blink of an eye.

Ignition is even faster, with near zero lock time, which virtually eliminates the effects of barrel movement after pulling the trigger. In fact, the bullet exits the barrel before a mechanical firing pin could even hit the primer in a conventional rifle.

Detachable Magazine

Many rifles feature detachable magazines that allow for quick loading and/or unloading of the firearm.

(Where can we find this information?)

Materials (i.e. titanium, composite, etc.)

(Where can we find this information?)

Materials -- new high technology materials have been used for the production of firearms, such innovations as ceramics and composites have been successfully used in rifle barrels and produce barrels that are light weight, more rigid, and handle the heat better than traditional steel barrels. These exotic barrels are very expensive and are generally only found on expensive target or varmint rifles.

SECTION 2: CENTERFIRE CARTRIDGES

Opening

(To be written)

Anatomy of a Centerfire Cartridge

Cutaway: The rifle cartridge is composed of 11 different parts.

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Using your mouse, rollover and click on the different parts of this cartridge.

The Case is usually made of brass, containing the powder charge, the primer, and the bullet. (Before development of the metallic cartridge, the term was used to mean a roll or case of paper containing powder and shot.

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The Bullet is a single projectile fired from a firearm.

The Crimp is the portion of a cartridge case that is bent inward to hold the bullet in place,

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The Primer is the collective term for the chemical primer compound, cup and anvil which, when struck, ignites the powder charge.

The Shoulder is the section of the case that tapers down to the smaller diameter of the bullet.

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The Neck is the section of the case where the bullet is seated.

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The Extractor Groove – is a small groove cut in the case to enable the extractor to grab the shell and eject it. Not all Centerfire cases have extractor grooves, some use the Rim to extract.

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The Rim – is the flanged portion at the end of the cartridge. On certain cartridges the Rim is larger in diameter than the case.

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Smokeless Powder is the general term for any propellant used in firearms, which burns upon ignition. The two major types are black powder, which is a physical mixture of charcoal, sulfur and saltpeter, and smokeless powder, which is a nitrated chemical compound in granular form.

Deleted: The Rim is the edge on the base of a cartridge case which stops the progress of the case into the chamber. It's also the part of the case the extractor grips onto to remove it from the chamber.

The Head – is the end of the cartridge at which primer is inserted.

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Jacket – The envelope of brass or copper enclosing the lead core of a compound bullet.

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Cartridge Designation & Calibers

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The cartridge designation is the term used to designate the specific cartridge for which a firearm is chambered. The cartridge designation is marked on the head of the cartridge (also referred to as the Head Stamp) and must match the marking on the firearm barrel.

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The caliber of rifles is the inside diameter of the barrel before the rifling has been cut. It is the distance between the lands. Many different cartridges are the same caliber. For example, a 308 Win, 30-06 Springfield, and a 300 Remington Ultra Mag are all .308 calibers or .308 bore diameter.

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Caliber is usually expressed in hundredths of an inch or in millimeters. For example, a 30 caliber (What can we use for a centerfire rifle here?) barrel measures 308/100 of an inch in diameter. Centerfire rifles come in a large variety of calibers (cartridge sizes) generally from .17 to .458 caliber, but have been made up to .700 caliber.

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¶
The caliber of rifles is the inside diameter of the barrel before the rifling has been cut. It is the distance between the lands.
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Types of Cases

There are various types of cases, each with varying shapes and contours.

As previously mentioned, different cartridges can be of the same caliber, for example the 308 Winchester, the 30-06 Springfield, and the 300 Remington Ultra Magnum are all 308 caliber... what differs is the shape of the case.

(Edit Note: Show example of a 300 Winchester, 30-06 Springfield, and a 300 Remington Ultra Magnum.)



The different taper of each case allows for differing amounts of powder in each case. More powder can be added to the larger volume cases which provide for more velocity for a bullet of the same diameter and weight.

Cases also differ by the type of extraction used in the firearms, and how the case fits in the chamber (head space). Cases can be categorized as follows:

Rimmed – Example is a 45-70 Government cartridge

Belted – Example is a 7mm Remington magazine

Rebated – Example 300 Remington Short Action Ultra Magnum

Semi-Rebated – Example – 280 Remington

(Edit Note: Show Pictures of each case and point to distinguishing features i.e. Rim of Rimmed case, Belt of Belted case, etc.)

Types of Bullets

Today's rifle bullets come in a variety of designs — from simple 100% lead bullets, to traditional copper-jacketed bullets to specialized, premium-performance bullets with enhanced features. The two most critical features of bullet design are accuracy and on-game performance.

There are five major types of Centerfire bullets. The illustration below shows a cross section of each of the bullet types, with four of the five bullets containing a jacket of brass or copper.

The five general bullet types are:

- Tipped – notice that the tip of the bullet has a polymer or bronze tip.
- Pointed Soft Point – this bullet has a small opening at the Point where the jacket is missing.
- Soft Point – The soft point is the same construction as the Pointed Soft Point but with a rounded front edge.
- Hollow Point – Notice the bullet tip has an opening or hollow tip.
- Full Metal Jacket – the entire bullet is covered by a copper or brass jacket, including the point.
- Lead Bullet – Lead bullets come in different shapes, and do not have a jacket.

You will find that most of the high performance rifle bullets today contain a jacket to help hold the lead core together as the bullet leaves the barrel, and in many cases this jacket also helps promote optimum expansion of the bullet on target.

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Remington Core-Lokt¶
America's most popular deer load. More deer have fallen to a Core-Lokt cartridge than any other brand in history. Available in soft point and pointed soft point, the Core-Lokt bullet design is the original controlled expansion bullet. Its progressively thickening copper jacket is locked to a solid lead core, promoting perfectly controlled expansion and high weight retention for absolutely dependable on-game results.¶

¶
Remington Boat Tail¶

¶
An unprecedented combination of long-range accuracy and on-game performance. Wind-defying boat tail design delivers match-grade groups. Reliably expands to 1.7-X caliber with over 70% weight retention. Featured in Remington Premier Boat Tail cartridges.¶

¶
Nosler Partition¶

¶
The sleek profile and uniform concentricity of this bullet delivers outstanding accuracy and flat trajectory. The integral partition preserves the integrity of the rear core to retain more of its original weight.¶

¶
Nosler Ballistic Tip¶

¶
Astonishingly accurate at long range. Flat-shooting performance minimizes range estimation errors. Combination of polycarbonate tip and specially tapered jacket delivers instant, controlled expansion at all ranges. Used in Remington Premier Ballistic Tip cartridges.¶

¶
Swift Sirocco Banded¶

¶
Near-perfect jacket concentricity. Combines ultra-flat shooting performance and deep on-game penetration with near-perfect levels of expansion and weight retention. Only available in Remington Premier Sirocco.¶

¶
Swift A-Frame¶

¶
The ultimate in reliable on-game performance. A-Frame construction and proprietary ... ¶

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Additional features.

Bullet weight – Cartridges of the same designation will come with different bullet weights. The different bullet weights will allow the shooter to select a cartridge ideally suited to the type of hunting or shooting he or she is doing.

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Bullet weights are expressed in grams of weight.

Why would you select a heavy bullet vs a lighter bullet? Well, for example, a 7mm-08 with a 120 gram bullet will leave the muzzle faster than a 140 gram bullet. The lighter bullet will tend to travel on a flatter path, with slightly less drop down range than the heavier 140 grain bullet.

The biggest difference will be in retained energy, with the lighter bullet losing energy more quickly than the heavy one.

Bullet weight selection will depend upon whether the shooter wants a flatter, faster bullet or a slower bullet with more take down power.

(Where can we find this information?)

Ballistics

(Not sure what to include in this section? Where do we find information on terms, properties? What's the best way to illustrate this?)

Many ammunition manufacture's will publish Ballistic tables to show down range performance for their loads. These charts like the one featured in Remington's catalog will give the shooter some general guidance on bullet performance.

(Edit note: show Remington Ballistics table)

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These tables are a general guideline to illustrate cartridge performance. The manufacturers use a computer to generate ballistics information, and they assume certain atmospheric, temperature, barrel length, and other variables in order to calculate their numbers.

In the real world the flight of a bullet will vary for a variety of reasons. Altitude, temperature, wind speed, relative humidity, and barometric pressure will all tend to have some effect on the flight of the bullet.

We will not attempt to review the impact of each of these variables on bullet flight in this course, but instead show a shooter how they can use a ballistics chart to understand how a bullet flies and what they can expect to see at different distances.

For purposes of this example, we will chose two bullets, 45-70 Government, a heavy slower bullet, and a 7mm-08, a smaller but faster bullet.

Bullets begin to fall as soon as they leave the muzzle, so typically sights are set to make the line of sight appear as though the bullet is traveling on a direct line to the target. If the gun is sighted to hit the target at 100 yards, the Ballistics of the two sample bullets would be as follows:

Velocity (ft/sec.)					
Cartridge	Bullet Wt.	Muzzle	100 yds.	200 yds.	300 yds.
45-70 Govt.	300	1810	1497	1344	1073
7mm-08 Rem	140	2860	2625	2402	2189

Energy (ft-lbs)					
Cartridge	Bullet Wt.	Muzzle	100 yds.	200 yds.	300 yds.
45-70 Govt.	300	2182	1492	1031	767
7mm-08 Rem	140	2542	2142	1783	1490

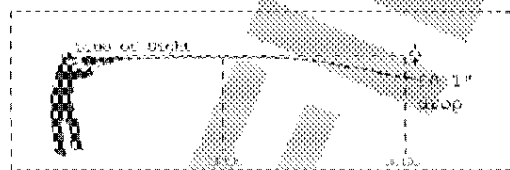
Trajectory					
Cartridge	Bullet Wt.	100 yds.	200 yds.	300 yds.	
45-70 Govt.	300	zero	-13.8"	-50.1"	
7mm-08 Rem	140	zero	-7.9"	-32.9"	

The 45-70 with its larger and heavier bullet flies slower than the 7mm-08, at 200 yards the Velocity is half of 7mm-08.

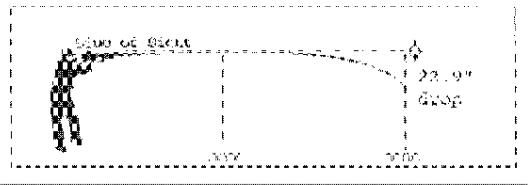
The energy of the 45-70 is 85% of the 7mm-08 at the muzzle, but the heavier bullet quickly loses energy and at 200 yards it has only 57% of the 7mm-08's energy.

The trajectory will also vary with the slower and heavier 45-70 bullet falling faster than the 7mm-08, more than 2 times more drop than the 7mm-08 in this example – shots at 300 yards.

Edit note: show chart first shoot the 45-70



Then the shoot the 7mm-08



These are extreme examples of two very different cartridges, however the example is intended to show how two different bullets can perform. Refer to your manufacturer's ballistic table to help determine the type of cartridge you need for the type of shooting you are doing.

Every shooter should study and understand ballistics they plan to use.

Hunting

Please click on the different types of game for information about the recommended caliber, grain, and type.

JOHN PORK we still need game and cartridge recommendations.
Shooting

Bench Rest

(Where can we find this information?)

Silhouette

(Where can we find this information?)

Long-range Target

(Where can we find this information?)

Recommended Calibers

(Where can we find this information?)

How to sight in a rifle

Now that you understand the basics of rifle flight, you can learn to sign your rifle.

Using the ballistics table and understanding the Long Range Trajectory of your cartridge you can sight in your rifle for optimum performance to known shooting distance.

Distance is often hard to judge in the field, and without a range finder the shooter must estimate distance.

Deleted: A ballistic table is a descriptive and performance data sheet on ammunition. Information usually includes: bullet weight and type, muzzle velocity and energy, as well as velocity, energy, and trajectory data at various ranges. ¶

Deleted: tables for his or her firearm and the ammunition used. In order to hunt safely, you must know how far your firearm and ammunition will shoot.

Deleted: Centerline cartridges can be divided into three different groups

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Varmint: *(from woodchuck to coyotes)* ¶
-#> 17 Rem. (25 grain bullet) to 6mm Rem. (90 grain bullet) ¶
¶
->> Super-X ¶
218 Bae 46 gr. HP 222 Rem.
60 gr. PSP 26-06 Rem. 90
gr. PEP ¶
22 Hornet 45 gr. SP 222 Rem.
55 gr. FMJ 26-50 Win. 86 gr.
SP ¶
22 Hornet 46 gr. HP 223 Rem. 53 gr.
HP 30 Carbine 110 gr. HSP ¶
22-250 Rem. 85 gr. PSP 223 Rem.
55 gr. PSP FMJ 30-06 Springfield
125 gr. PSP ¶
225 Win. 55 gr. PSP
32-20 Win. 100 gr. Lead ¶
¶
->> Supreme ¶
22-250 Rem. 52 gr. HPBT ¶
¶
CXP1: Varmints - Built for rapid expansion or fragmentation on impact, and immediate ¶
stopping power. Ideal for prairie dog, coyote, woodchuck and other small varmints when ¶
preservation of meat is unnecessary. ¶
¶
Big Game: *(from deer to bear and elk)* ¶
-#> 6mm Rem. (100 grain bullet) to 30-06 Springfield (180-220 grain bullets) ¶
¶
->> Super-X ¶
223 Rem. 64 gr. PP 284 Win.
150 gr. PP 308 Win.
160 gr. PP ¶
243 Win. 100 gr. PP
7.62X39mm Russian 123 gr. SP 32
Win. Spt. 170 gr. PP, ST ¶
6mm Rem. 109 gr. PP 30-30 Win.
504 gr. HP, PP, ST 8mm Mauser
170gr. PP ¶
26-06 Rem. 120 gr. PEP 30-30 Win.
170 gr. PP, ST 35 Rq ... [2]

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One trick many deer hunters use is... the distance from the top of a deer's shoulders to the breast is about 18" so many hunters will go to the Ballistics tables and zero their sights to a distance where shorter or longer shots are still within 9" of the target.

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For example: a 7mm-08 Remington zeroed at 200 yards will require a shooter to aim below the target by 1.8" at 100 yards, and above the target by 7.8" at 300 yards.

Knowing that his game or the target is 18" from top to bottom, then the shooter can optimize his sight in distance to allow for even a missed shot to still hit the target.

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SECTION 3: SAFETY, STORAGE & MAINTENANCE

Opening

(To be written)

10 commandments

The *Ten Commandments of Firearms Safety* should be etched in your memory forever. Let them govern your actions wherever and whenever you're involved with firearms. In the woods. On the range. Or in your home. Please take time to review and understand these rules.

Commandment 1: Always keep the muzzle pointed in a safe direction. That means away from anything you don't want to see a hole in. And that goes double for when you're loading or unloading – always treat every gun like it was loaded, and make it a habit to know where your gun is pointed – all the time.

Commandment 2: Firearms should be unloaded when not actually in use. Unload as soon as you're finished shooting – before you walk to the car or the camp, before you do anything else – and make sure it is completely unloaded: no shells in the chamber or magazine. Never let a loaded gun out of your sight or out of your hands. Always check a gun that you are handed or pick up – don't just assume it is unloaded.

Commandment 3: Don't rely on your gun's safety. Your gun is a mechanical device and it could fail. Don't touch the trigger until you are ready to fire – take special notice of where your hands are on your gun when loading or unloading. And don't pull the trigger when the safety is on – or in between safe and fire.

Commandment 4: Be sure of your target and what's beyond it. Too many hunters have had accidents by being short sighted – not paying enough attention to what was behind that prize buck. Never shoot at a sound, or movement or a patch of color. A hunter in camouflage has too many times been mistaken for a target by a shooter too quick on the trigger. A bullet goes great distances at great speeds. Pay attention to where your bullet will go and what it will hit if it overshoots your target or ricochets.

Commandment 5: Use proper ammunition. It only takes one shell that's the wrong size to hurt or kill someone or destroy your shotgun. Make sure you know the exact gauge your gun takes, and

never mix ammunition. Read your gun's instruction manual and all the instructions on a box of ammo. Make sure you look at your shells closely before loading and make absolutely sure you're loading only the caliber your gun will take. Also, never use ammunition that has been reloaded by someone else. Many shooters handload as a hobby or to save money. Handloaded ammunition that doesn't meet factory standards can be very dangerous – you could severely damage your gun or get hurt with ammunition that has the wrong powder, too much powder or the wrong load. Be very careful!

Commandment 6: If your ammunition doesn't fire when you pull the trigger, handle with care. Go back to the first commandment and make sure your muzzle is pointing in a safe direction – that gun could go off at any time – and treat it as such. Keep your face out of the breach, put the safety on and carefully open the action, unload and dispose of the cartridge safely. Anytime there is a shell in the chamber, your gun is loaded and ready to use. Take care and understand that your gun could fire without warning.

Commandment 7: Always wear eye and ear protection when shooting. Wear shooting glasses to protect from falling shot or clay target chips, even twigs and branches in the field. Always protect your eyes when you clean your gun, so that parts under pressure like springs or cleaning solvents stay clear of your eyes. Your hearing can be permanently damaged from shooting noise – so be sure to wear a headset on the range and use earplugs in the field, especially in small spaces like duck blinds.

Commandment 8: Be sure the barrel is clear of obstructions before shooting. Look closely and make sure there's no mud, snow or even excess lubricant or grease in the bore, and no ammunition in the chamber before you load your gun. Even the smallest obstruction could cause your barrel to bulge or burst when you fire. And when you fire, trust your gut. If you think the noise or recoil from your gun seems weak or different than usual, stop firing and check for debris or obstructions. Always be sure your barrel is clear and that you're using the right shells for your gun.

Commandment 9: Don't alter or modify your gun and have it serviced regularly. Your shotgun has certain factory specs to be followed in order to make sure it operates safely. Don't try to alter the trigger, the safety or other mechanisms. Your gun wears as you use it – so make sure you bring it to a gunsmith periodically for service, and learn to clean and lubricate it between hunts. Of course, make sure your gun is completely unloaded before you clean it. Always clean your barrel from the chamber end to the muzzle. Make it a habit to clean your bore every time you shoot. Clean your gun completely before and after storing it for any length of time – at least once a year. Examine the inner workings of your gun and make sure they don't have rust or dirt and debris on them. Use the recommended lubricant for your gun and don't overdo it.

Commandment 10: Learn the mechanical and handling characteristics of the firearm you are using. Know your gun. Know how it behaves when shooting, know its mechanics and how to carry it and handle it. Be totally familiar with everything about your gun before you try to use it. Different types of guns have different characteristics that may dictate how you handle them.

There is one other rule of centerfire rifle safety – and that is: always shoot sober. Even one beer can affect your judgment and coordination. You need a clear head at all times where guns are involved...no alcohol or drugs!

That's pretty much it – if you follow these commandments, you'll be safe, and you can show other hunters the right way to shoot safely.

Proper Care

Please click on each rifle to view the steps for properly cleaning that particular firearm.

Pump action

Cleaning the barrel

1. First check the chamber and magazine to make sure there are no cartridges in the firearm. It is a good idea to use the instructions and the equipment provided in a good cleaning kit.
2. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.
3. Put the cleaning brush into the gun cleaning solvent.
4. Push the cleaning brush through the barrel several times. You should always clean the barrel from the muzzle to the chamber.
5. Remove the brush from the rod, and attach tip with correct size cleaning patch and push through the bore.
6. Repeat several times using a new cleaning patch each time, until the patch is not dirty.
7. Push a clean patch saturated with Rem Oil through the barrel.
8. Push a clean, dry patch through the barrel to remove excess lubricant.
9. Apply a thin coat of Rem Oil to the outside of the barrel with a soft, clean cloth.

Cleaning the trigger plate

1. Engage the safety mechanism.
2. Close the action.
3. Tap out front and rear trigger plate pins.
4. Lift rear of the trigger plate assembly and remove the assembly from the receiver.
5. Spray the trigger plate assembly with Rem Oil as shown. Let stand for 15 minutes. Spray again to wash off components. Shake off excess lubricant.
6. Check to make sure that the end of the disconnecter is below end of left connector.
7. Carefully insert the trigger plate assembly into the receiver.
8. Position to align holes and tap in front and rear trigger plate pins.

Autoloading action

Cleaning the barrel

1. First check the chamber and magazine to make sure there are no cartridges in the firearm. It is a good idea to use the instructions and the equipment provided in a good cleaning kit.
2. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.

3. Put the cleaning brush into the gun cleaning solvent.
4. Push the cleaning brush through the barrel several times. You should always clean the barrel from the muzzle to the chamber.
5. Remove the brush from the rod, and attach tip with correct size cleaning patch and push through the bore.
6. Repeat several times using a new cleaning patch each time, until the patch is not dirty.
7. Push a clean patch saturated with Rem Oil through the barrel.
8. Push a clean, dry patch through the barrel to remove excess lubricant.
9. Apply a thin coat of Rem Oil to the outside of the barrel with a soft, clean cloth.

Cleaning the chamber

1. Engage the safety mechanism.
2. Pull the operating handle rearward until held open by the magazine follower.
3. Put the brush into the cleaning solvent.
4. Push the brush into the chamber through the ejection port. Repeat several times..
5. Using the rear of the cleaning brush with attached cleaning patch, dry chamber. Repeat using a clean patch each time, until patch is not dirty.

Cleaning the action spring and action tube

1. Loosen the fore-end screw and remove the fore-end.
2. Brush action spring and action tube with gun cleaning solvent.
3. Dry with clean cloth.
4. Apply a thin coat of Rem Oil to prevent rusting.
5. Replace the fore-end and tighten fore-end screw.

Cleaning the trigger plate

1. Engage the safety mechanism.
2. Close the action.
3. Tap out front and rear trigger plate pins.
4. Lift rear of the trigger plate assembly and remove the assembly from the receiver.
5. Spray the trigger plate assembly with Rem Oil as shown. Let stand for 15 minutes. Spray again to wash off components. Shake off excess lubricant.
6. Check to make sure that the end of the disconnecter is below end of left connector.
7. Carefully insert the trigger plate assembly into the receiver.
8. Position to align holes and tap in front and rear trigger plate pins.

Bolt-action

Cleaning the barrel

1. First check the chamber and magazine to make sure there are no cartridges in the firearm. It is a good idea to use the instructions and the equipment provided in a good cleaning kit.
2. Remove the bolt assembly.
3. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.
4. Put the cleaning brush into the gun cleaning solvent.

NOTE: Barrel should lay horizontally with the ejection port facing down during cleaning. Always clean the barrel from the chamber end to the muzzle.

5. Push the cleaning brush through the barrel several times.
6. Remove brush from rod, attach tip with patch, and push through the bore.
7. Repeat several times, using a new cleaning patch each time, until the patch is not dirty.
8. Push a clean patch saturated with Rem Oil through the barrel.
9. Push a clean dry patch through the barrel to remove excess lubricant.
10. Apply a thin coat of Rem Oil to the outside of the barrel with a soft clean cloth.
11. After cleaning the barrel, clean the receiver and the trigger assembly.

Cleaning the receiver and trigger assembly

1. Put the safety mechanism in the 'S' position.
2. Remove the bolt assembly.
3. Turn the rifle upside down.
4. Remove the stock screws.
5. Lift the stock away from the receiver and trigger assembly.

MODELS WITHOUT A FLOOR PLATE ONLY: Remove the magazine spring and follower from the receiver.

6. Thoroughly spray the receiver inside and out with Rem Action Cleaner and allow drying.
7. Thoroughly spray inside the trigger assembly at the four points with Rem Action Cleaner.
8. Place the safety in the fire "F" position. Pull the trigger rearward and release multiple times.
9. Pull and hold the trigger rearward. Then using a small punch or screwdriver depress the sear and release multiple times.
10. Release the trigger and operate the safety from the fire "F" to the safe "S" position multiple times.
11. Again thoroughly spray inside the trigger assembly at the four points with Rem Action Cleaner. Air dry or use compressed air to thoroughly dry the trigger assembly.
12. Place a drop of Rem Oil in each of the four points in the trigger
13. Place the safety in the fire "F" position. Pull the trigger rearward and release multiple times. Ensure the trigger returns completely to the forward position each time. If the trigger does not completely return, reassemble the rifle and return it to a Remington® Authorized Service Center.

WARNING! If the trigger does not fully return to the forward position each time it is released, then your rifle is NOT in a safe operating condition and it must NOT be used until you have had it inspected by a Remington Authorized Service Center.

14. If the trigger completely returns as specified, pull and hold the trigger rearward and using a small punch or screwdriver depress the sear and release multiple times. The sear must return to the full upward position without hesitation. If the sear does not freely return, reassemble the rifle and return it to a Remington Authorized Service Center.

WARNING! If the sear does not return to the full upward position without hesitation, then your rifle is NOT in a safe operating condition and it must NOT be used until you have had it inspected by a Remington Authorized Service Center.

15. If the sear freely returns to the full upward position, release the trigger and operate the safety from the fire "F" to the safe "S" position multiple times. The safety must operate freely. The safety detent spring must position the safety in the full safe "S" or fire "F" position. The safety should not remain in a position anywhere between the full safe "S" or fire "F" position. If the safety does not freely return to the full safe "S" or fire "F" position, repeat operations 7 thru 15. If the safety does not freely return to the safe "S" or fire "F" position after repeating operations 7 thru 15, return the firearm to a Remington Authorized Service Center for an inspection of the safety and trigger assembly.
16. Place the safety in the safe "S" position and lightly spray Rem Oil on all the external surfaces of the trigger assembly and receiver. Wipe off excess oil.

Storing Your Firearm

(Visuals: to support copy)

When putting a firearm away, be sure that all metal surfaces including the bore are coated with a *light* film of Rem Oil. This rust fighter is a "must" even if you plan to use the gun again in a few hours. Spray it on, or apply it with a Rem Oil Wipe. The wipe is also perfect for removing fingerprint acids.

Store your firearms in a secure, dry area. Household closets are a poor choice, exposing guns to damage. Sheepskin or cloth-lined field cases also are unsuitable, since they trap moisture. The ideal solution is a metal case or locking gun cabinet. Inspect your stored guns regularly, to make sure no rust is forming.

Use Rem Action Cleaner to clean off the grease when taking a firearm out of storage. Before firing again, clear the bore of grease, oil and any obstructions. Push clean patches through on a jag, or use a clean bore swab.

Take special care if there are children around. Kids are fascinated by guns. It's a natural curiosity that can have tragic consequences when not properly supervised. Store your firearms in a locked gun safe or some other location that physically bars a child from gaining access. Ammunition should be stored and locked in a location separate from your firearms. Never leave an unsecured

firearm or ammunition in a closet, dresser drawer or under the bed. Remember, it is your responsibility to make sure that children and others unfamiliar with firearms cannot get access to your firearms and ammunition.

Please click on each bullet for additional information.

Remington Core-Lokt

America's most popular deer load. More deer have fallen to a Core-Lokt cartridge than any other brand in history. Available in soft point and pointed soft point, the Core-Lokt bullet design is the original controlled expansion bullet. Its progressively thickening copper jacket is locked to a solid lead core, promoting perfectly controlled expansion and high weight retention for absolutely dependable on-game results.

Remington Boat Tail

An unprecedented combination of long-range accuracy and on-game performance. Wind-defying boat tail design delivers match-grade groups. Reliably expands to 1.7-X caliber with over 70% weight retention. Featured in Remington Premier Boat Tail cartridges.

Nosler Partition

The sleek profile and uniform concentricity of this bullet delivers outstanding accuracy and flat trajectory. The integral partition preserves the integrity of the rear core to retain more of its original weight.

Nosler Ballistic Tip

Astonishingly accurate at long range. Flat-shooting performance minimizes range estimation errors. Combination of polycarbonate tip and specially tapered jacket delivers instant, controlled expansion at all ranges. Used in Remington Premier Ballistic Tip cartridges.

Swift Scirocco Bonded

Near-perfect jacket concentricity. Combines ultra-flat shooting performance and deep on-game penetration with near-perfect levels of expansion and weight retention. Only available in Remington Premier Scirocco.

Swift A-Frame

The ultimate in reliable on-game performance. A-Frame construction and proprietary bonding process produce incredibly uniform, controlled expansion to 2-X caliber with virtually 100% weight retention. Chosen for use exclusively in Remington Premier Safari Grade cartridges.

Varmints: (from woodchuck to coyotes)

17 Rem. (25 grain bullet) to 6mm Rem. (80 grain bullet)

>> Super-X

218 Bee 46 gr. HP
22 Hornet 45 gr. SP
22 Hornet 46 gr. HP
22-250 Rem. 55gr. PSP

222 Rem. 50 gr. PSP
222 Rem. 55 gr. FMJ
223 Rem. 53 gr. HP
223 Rem. 55 gr. PSP, FMJ
225 Win. 55 gr. PSP

25-06 Rem. 90 gr. PEP
25-50 Win. 86 gr. SP
30-06 Rem. 110 gr. HSP
30-06 Springfield 125 gr. PSP
32-20 Win. 100 gr. Lead

>> Supreme

22-250 Rem. 52 gr. HPBT

CXP1: Varmints – Built for rapid expansion or fragmentation on impact, and immediate stopping power. Ideal for prairie dog, coyote, woodchuck and other small varmints when preservation of meat is unnecessary.

Big Game: (from deer to bear and elk)

6mm Rem. (100 grain bullet) to -30-06 Springfield (180-220 grain bullets)

>> Super-X

223 Rem. 64 gr. PP
243 Win. 100 gr. PP
6mm Rem. 100 gr. PP
25-06 Rem. 120 gr. PEP
25-35 Win. 117 gr. SP
250 Savage 100 gr. ST
257 Roberts +P 117 gr. PP
6.5X55 Swedish 170 gr. SP
264 Win. Mag. 140 gr. PP
270 Win. 130 gr. PP, ST
270 Win. 150 gr. PP
280 Rem. 140 gr. PP
7mm Mauser 145 gr. PP
7mm Rem Mag. 150 gr. PP

284 Win. 150 gr. PP
7.62X39mm Russian 123 gr. SP
30-30 Win. 504 gr. HP, PP, ST
30-30 Win. 170 gr. PP, ST
30-06 Springfield 150 gr. PP, ST
30-06 Springfield 165 gr. PSP
30-06 Springfield 180 gr. PP
30-40 Krag 180 gr. PP
300 Win Mag. 150 gr. PP
300 Savage 150 gr. PP, ST
300 Savage 180 gr. PP
300 Savage 190 gr. ST
303 British 180 gr. PP
307 Win. 180 gr. PP
308 Win. 150 gr. PP, ST

308 Win. 180 gr. PP
32 Win. Spt. 170 gr. PP, ST
8mm Mauser 170gr. PP
35 Rem. 200 gr. PP
356 Win. 200 gr. PP
357 Mag. 158 gr. JSP
358 Win 200 gr. ST
375 Win. 200 gr. PP
38-40 Win. 180 gr. SP
38-55 Win 255 gr. SP
44 Rem. Mag. 210 gr. STHP
44 Rem. Mag. 240 gr. HSP
44-40 Win. 200 gr. SP
45-70 Govt 300 gr. JHP

>> Supreme

243 Win. 100 gr. SPBT
270 Win. 140 gr. STBT, FS
280 Win. 160 gr. STBT, FS
Springfield 165 gr. STBT, FS
308 Win. 150 gr. STBT, FS
300 Win. Mag. 165 gr. FS

CXP2: Light, Thin-Skinned North American Game – Rapid controlled expansion. Penetrates thin skin, light muscle and bone. Ideal for game such as antelope, mule deer, whitetail deer and black bear.

Very Large Game: (from large bear and moose to the great African game)

- 30-06 Springfield (180-220 grain bullets) to -.458 Win. Mag. (500 / 510 grain bullets)

>> Super-X (large game/extra large game)

7mm Rem. Mag. 175 gr. PP
30-06 Springfield 180 gr. ST
30-06 Springfield 220 gr. ST
300 Win. Mag. 220 gr. ST
300 H&H Mag. 180 gr. ST

308 Win. 180 gr. ST
338 Win. Mag. 200 gr. PP
338 Win. Mag. 225 gr. SP
375 H&H Mag. 300 ST

>> Supreme

7mm Rem. Mag. 160 gr. STBT, FS
30-06 Springfield 180 gr. STBT, FS
300 Win. Mag. 180 gr. FS
300 Win. Mag. 190 gr. STBT

300 H&H Mag. 180 gr. FS
308 Win. 180 gr. FS
338 Win. Mag. 203 gr. FS

>> Super-X (African game)

375 H&H Mag. 300 gr. FMJ
458 Win. Mag. 510 gr. SP

>> Supreme

375 H&H Mag. 270 gr. FS

CXP3, CXP3D: Large, Heavy Game – Designed for delayed controlled expansion for penetrating thick tough skin, heavy muscle tissue and bone. Ideal for game such as elk, moose, and large bear.

CXP4: Extra Large, Dangerous African Game – Built to penetrate thick, extra tough hide, heavy bone and powerful muscle tissue. Ideal for game such as Cape buffalo and elephant.