

METRIC RELOADING GUIDE for Centerfire Cartridges

2/2002



VIHTAVUORI

Burning Rate Chart

This table indicates the *approximate* order of the burning rate of the commonly available powders. The table is only approximate and *not* to be used for developing loads.

	Vihtavuori	Norma	RWS	SNPE	PRB	IMR	Alliant	Hodgdon	Accurate	W-W
Fast Burning	N310	R1	P805 P801	Ba10	PCL514 PCL504 PCL505 PCL505 PCL506			Clays Clays Int. HP38		
	N320					700X PB SR7625	Bullseye RedDot Green Dot	Solo1000 Trap100		231 452
	N330		P804 P803							473
	N340			Ba9	PCL501		Unique	Clays Universal HS-6	No. 5	540
	3N37					SR4756	Herco			
	N350									
	3N38						BlueDot			571
	N105							HS-7	No.7	
							Hercules 2400		No.9	
	N110	R-123	P806 R910	S10 Tubal1	PCL512	SR4759 IMR4227		H110 H4198		296 680
	N120	200	R901			IMR4198	Reloader 7	H4227	MP 5744	
	N130		R902	Tubal2 Tubal3	PCL508 PCL507	IMR3031	Reloader 11		1680 2015	
	N133	201 202						H322 BL-(C)2 H335	2230 2460	748
	N135		R903			IMR4064 IMR4895	Reloader 12	H4895	2520	
	N140		R907	Tubal4 Tubal5 Tubal6	PCL511	IMR4320	Reloader15	Varget H380 H414	2700	760
N540		R904					H4350	4350		
N150			Tubal7		IMR4350	Reloader 19				
N550	204						H450			
N160					IMR4831				785	
N560		R905	Tubal8				H4831	3100		
N165	MRP						Reloader 22	H1000		
N170					IMR7828		H870	8700		

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Preface

The new Vihtavuori Metric Reloading Guide 2/2002 for Centerfire Ammunition is an updated version of the previous Vihtavuori Reloading Guide 1/2002. The contents of this new issue 2/2002 has been revised with new loading data for:

- legendary LAPUA D166 FMJBT bullet in cal. 7,62 x 53R
- cal. 7,5 x 55 Swiss GP31
- cal. .300 Remington Ultra Magnum
- cal. .38 Super Lapua, Lapua's implementation of .38 Super Auto.

All the loads in this guide are pressured according to the CIP method. The maximum loads given in the tables are determined according to the CIP/SAAMI maximum pressure specifications, whichever is lower. The listed maximum loads must never be exceeded.

Due to the differences in the cartridge components, individual weapons, shooting temperatures etc. always start developing your load by using the starting load according to the loading data. If there is no indication of the starting load, use 15 % lower charge than the listed maximum load as your starting load.

The Vihtavuori powders are manufactured by Nexplo Vihtavuori Oy in Vihtavuori plant. Sales and marketing of reloading powders as well as customer service is carried out by Nammo Lapua Oy. The list of the powder distributors can be found at **www.vihtavuori.fi/Distributors.html** The distributor information as well as the contact information for customer service is given in the back of this guide.

We wish you successful reloading with Vihtavuori powders.



Rifle Powders

N100 series

The series N100 powders are primarily rifle powders, with suitable speeds to optimize handloading from the tiny .17 Remington and .22 Hornet all the way to the monster bashing .458 Winchester Magnum. There are ten speeds in this series and they include:

N110: This is a very fast burning propellant that can be used in applications which previously used Hercules 2400, Hodgdon H110, or Winchester 296. Typical applications include: .22 Hornet, .25-20 Winchester, .357 S&W Magnum, .357 Maximum, .44 Magnum, and .45 Winchester Magnum.

N 120: This speed needs higher pressure than N110 in order to optimize burning. Burning rate falls near the various 4227s. It works superbly with comparatively light bullets in .22 caliber cartridges. It is, by nature, a limited application propellant.

N130: Burning rate is between IMR4227 and the discontinued Winchester 680. This is the powder used in factory loaded .22 and 6mm PPC.

N133: This speed is very close to IMR 4198 in quickness. Thus, it is ideal for the .222 Remington, .223 Remington, and .45-70 Government and other applications where a relatively fast burning rifle propellant is needed.

N135: This is a moderate burning propellant. It will fit applications similar to Hercules Reloder 12, IMR-4895 or IMR 4064. Applications range from the .17 Remington to the .458 Winchester.

N140: This powder can usually be used in place of Hercules Reloder 15, IMR 4320, and Hodgdon H380. Applications include: .222 Remington Magnum, .22-250 Remington (factory powder), .30-30 Winchester, .308 Winchester, .30-06 Springfield, .375 H&H Magnum, and so on.

N150: This is a moderately slow powder that can help refine rifle cartridge ballistics when N140 is just a tad too fast and N160 is a tad too slow. Works well in many applications previously filled by 760, H414, and IMR 4350.

N160: A relatively slow powder ideally suited to many magnum and standard rounds requiring a slow propellant. It has characteristics that makes it work well for applications previously using various 4350's, Hercules Reloder 19, and the various 4831's. For example some ideal applications are: .243 Winchester, .25-06 Remington, .264 Winchester Magnum, .270 Winchester (factory load), 7mm Remington Magnum, .30-06 Springfield, .300 Winchester Magnum, .338 Winchester Magnum, .375 H&H Magnum, etc. This is destined to being one of our most popular powders.

N165: A very slow burning magnum propellant for use with heavy bullets. Applications begin very heavy bullets in the .30-06, and include the .338 Winchester Magnum.

N170: Our slowest speed propellant and the slowest canister reloading powder generally available from any manufacturer.

N500 series

Adding nitroglycerol to the traditional single base powder makes possible in addition to geometry and coating a third controlled variable of ballistic properties: energy content. Vihtavuori calls powders which have nitroglycerol added (maximum 25 %) high energy NC-powders, which form N500 series.

Adding nitroglycerol to the high energy N500 series is done by impregnation. After that the grains are coated with a new type of chemical which results in very progressive burning characteristics.

The composition of a typical high energy powder is as follows:

- * nitrocellulose
- * coating agent
- * flame reducing agent
- * nitroglycerol
- * stabilizer
- * wear reducing agent

Geometrically the powders in the N500 series are equal to the N100 series. Although these new powders have a higher energy content, they do not cause greater wear to the gun. This is because the surface of the powder has been treated with an agent designed to reduce barrel wear.

N500 series powders work well at different temperatures, even better than the traditional N100 and N300 series. Temperature sensitivity naturally depends very much on the weapon and on the cartridge. The manufacturing technique employed permits a very high bulk density, which in turn makes it possible to use a bigger charge in a certain limited loading volume.

Vihtavuori High Energy powders are available in three burning rates:

N540: Burning rate like N140. Especially for .308 Winchester.

N550: Burning rate like N150. Especially for .308 Winchester and .30-06 Springfield.

N560: Burning rate like N160. Especially for .270 Winchester and 6.5 x 55 Swedish Mauser.

Powders For .50 BMG

For .50 BMG there are two special Vihtavuori powders available, 24N41 and 20N29. They are, like N100 series, single base surface treated powders. The burning rate of them is slower and their grain size is larger than that of the N100 series rifle powders. 24N41 is slightly faster burning than 20N29.

Handgun Powders

Handgun powders include the five N300 series propellants and two special propellants:

N310: Very fast burning and competitive with Bullseye and Accurate No.2. It has applications in a very wide range from the .25 ACP to the 9mm Luger.

N320 is a handgun powder of comparatively fast burning rate. Useful in many popular cartridges. Currently available data includes 9mm Luger, .38 Special, .357 Magnum, .44 Magnum, .45 ACP and .45 (Long) Colt. Burning rate generally is perhaps a tad faster than 231 or generally about like Red Dot.

N330: This is a handgun powder that has a burning rate similar to Green Dot, No. 5, or PB. Data is currently available for 9mm Luger, .38 Special, .40 S&W, .44 S&W Special and .45 (Long) Colt.

N340: With a burning rate not dissimilar to Winchester 540 or Herco, this powder is a wide application type. Data for the following handgun cartridges is currently available: .30 Luger, 9mm Luger, .38 S&W (Colt New Police), .38 Super Auto, .38 Special, .357 Magnum, .44 Magnum, .45 Auto and .45 (Long) Colt.

N350: This is the slowest burning propellant in the N300 series. Burning speed is about like Blue Dot, "Hi-Skor" 800-X or No. 7. Data is currently available for: 9mm Luger, .38 Super Auto, .38 Special, .357 Magnum, .44 Magnum and .45 Auto.

3N37: Burning speed is between N340 and N350, close to "Hi-Skor" 800-X, and it therefore has applications also in handgun cartridges. Data is currently available for all popular handgun calibers. The characteristics of this propellant makes it very desirable for competitive handgun shooting.

3N38: A powder for the high velocity loads of the 9mm Luger and the .38 Super with moderate bullet weight. Designed specially for competitive handgun shooting.

N105 Super Magnum: This special powder has a burning rate between N350 and N110. It is especially developed for handgun cartridges with heavy bullets and/or large case volume. Reloading data is currently available for 9 x 21mm, .38 Super Auto, .357 Magnum, .40 S&W, 10mm Auto, .44 Remington Magnum and .45 Winchester Magnum.

About the Data

Disclaimer

As Nammo Lapua Oy has no control over improper storage, handling, loading or use of our powders after they have left the factory, we make no warranty of any kind, either expressed or implied, limited or full. We specifically disclaim all warranties of fitness for a particular purpose and merchantability. We specifically disclaim all liability

for consequential damages of any kind whatsoever, whether or not due to seller's negligence or based on strict product liability or principle of indemnity or contribution, Nammo Lapua Oy neither assumes nor authorizes any person to assume for it any liability in connection with the use of this product.

How To Use The Data

Our rifle and handgun data listings generally contain maximum charges which are not to be exceeded. In some instances starting loads are also listed. Currently this booklet contains all of the data we can supply. Be certain you use the correct data and the specific bullet weight shown.

By staying 5 % below the maximum powder charge weight, pressures will be reduced by about 10 % while velocities will be only about 3 % lower than listed.

Caution: When loading handgun cartridges it is vital to maintain the minimum cartridge overall length (C.O.L.) listed in the tables. Shorter overall lengths may double chamber pressures. Longer lengths are permissible so long as the functioning of the handgun will not be impaired.

The data in the loading tables were obtained at an ambient temperature of 68 degrees Fahrenheit and relative humidity of 55 %. The values obtained were under carefully controlled conditions and may vary from those obtained with your firearm, specific component lots, loading dimensions, and loading procedures. The maximum charges must NEVER be exceeded. **Start loading with the starting load according to the loading data. If there is no indication of the starting load, use 15 % lower charge than the listed maximum.** When loading cartridges for which the listed charge is 10 grains or less, after firing 10 rounds at the minimum weight (15 % below maximum), increase charge weights by 0.2 grains and fire another 10 rounds. Repeat this procedure, if necessary, until you reach, but do not exceed, the maximum listed charge. The same process is followed for heavier charges except that charge weights from 11 to 25 grains use increments of 0.5 grains. For charges over 25 grains increments of 1.0 grains will be correct.

If even a single test round shows signs of excessive pressure discontinue the use of the load. Do not fire even a single additional cartridge. Seek qualified help before proceeding!

The traditional sign of overpressure is a flattened primer. When flattened primers start to occur, it is a definite warning that the charge should be reduced, quickly. Brass getting into the ejector and extractor cavities is a worse case. Blown out primers are worst still. If a case ruptures it may be a sign of a defective case or a truly lethal chamber pressure.

In case of overpressure signs it is wiser to back off, to be safe rather than sorry. Why risk potentially fatal injury?

Better to stop shooting and immediately discard all such reloads.

Read also the Reloading Safety Rules on pages 9 and 10.

Pressure

There are numerous factors which can change the ballistic performance of a load even when the data is followed exactly. For example: The internal dimensions of a firearm can vary greatly even between two of the same make and model. Pressures can vary to extremes as different firearms are used. Each change in brand and even within different lots of a specific brand component can cause notable ballistic changes. Too, changes in ambient temperature can also cause ballistic altering pressures. Not every bullet of a given diameter and weight will produce alike pressure. Changes in case brand can also affect ballistics. There are numerous other causes of varying pressure levels.

Therefore it is essential that the reloader be well versed in the methods of carefully working up a reload powder charge in small increments as outlined in the various reloading handbooks that are available from reliable sources. The data in this book is not intended for use by persons not thoroughly versed in such procedures.

This guide must supplemented by a good reloading handbook such as the Lapua Reloading Manual, the DBI Metallic Cartridge Reloading, the Vihtavuori Reloading Manual or other recognized manuals that may offer all appropriate information.

Properties of Smokeless Powder

Smokeless powders, or propellants, are essentially mixtures of chemicals designed to burn under controlled conditions at the proper rate to propel a projectile from a gun.

Smokeless powders are made in three forms:

1. Thin, circular flakes or wafers
2. Small cylinders
3. Small spheres

Single-base smokeless powders derive their main source of energy from nitrocellulose.

The energy released from double-base smokeless powders is derived from both nitrocellulose and nitroglycerine.

All smokeless powders are extremely flammable by design, they are intended to burn rapidly and vigorously when ignited.

Oxygen from the air is not necessary for the combustion of smokeless powders since they contain sufficient built-in oxygen to burn completely, even in an enclosed space such as the chamber of a firearm.

In effect, ignition occurs when the powder granules are heated above their ignition temperature. This can occur by exposing powder to:

1. A flame such as a match or primer flash.
2. An electrical spark or the sparks from welding, grinding, etc..
3. Heat from an electric hot plate or a fire directed or near a closed container even if the powder itself is not exposed to the flame.

When smokeless powder burns, a great deal of gas at high temperature is formed. If the powder is confined, this gas will create pressure in the surrounding structure. The rate of gas generation is such, however, that the pressure can be kept at a low level if sufficient space is available or if the gas can escape.

In this respect smokeless powder differs from blasting agents or high explosives such as dynamite or blasting gelatin, although smokeless powder may contain chemical ingredients common to some of these products.

High explosives such as dynamite are made to detonate, that is, to change from solid state to gaseous state with evolution of intense heat at such a rapid rate that shock waves are propagated through any medium in contact with them. Such shock waves exert pressure on anything they contact, and, as a matter of practical consideration, it is almost impossible to satisfactorily vent away the effects of a detonation involving any appreciable quantity of dynamite

Smokeless powder differs considerably in its burning characteristics from common "black powder".

Black powder burns essentially at the same rate out in the open (unconfined) as when in a gun.

When ignited in an unconfined state, smokeless powder burns inefficiently with an orange-colored flame. It produces a considerable amount of light brown noxious smelling smoke. It leaves a residue of ash and partially burned powder. The flame is hot enough to cause severe burns.

The opposite is true when it burns under pressure as in a cartridge fired in a gun. Then it produces very little smoke, a small glow, and leaves very little or no residue. The burning rate of smokeless powder increases with increased pressure.

If burning smokeless powder is confined, gas pressure will rise and eventually can cause the container to burst. Under such circumstances, the bursting of a strong container creates effects similar to an explosion.

For this reason, the Department of Transportation (formerly Interstate Commerce Commission) sets specifications for shipping containers for propellants and requires tests for loaded containers - under actual fire conditions - before approving them for use.

When smokeless powder in D.O.T. approved containers is ignited during such tests, container seams split open or lids pop off - to release gases and powder from confinement at low pressure.

How to Check Smokeless Powder for Deterioration

Although modern smokeless powders are basically free from deterioration under proper storage conditions, safe practices require a recognition of the signs of deterioration and its possible effects.

Powder deterioration can be checked by opening the cap on the container and smelling the contents.

Powder undergoing deterioration has an irritating acidic odor. (Don't confuse this with common solvent odors such as alcohol, ether and acetone).

Check to make certain that powder is not exposed to extreme heat as this may cause deterioration. Such exposure produces an acidity which accelerates further reaction and has been known, because of the heat generated by the reaction, to cause spontaneous combustion.

Never salvage powder from old cartridges and do not attempt to blend salvaged powder with new powder. Don't accumulate old powder stocks. The best way to dispose of deteriorated smokeless powder is to burn it out in the open at an isolated location in small shallow piles (not over 1" deep). The quantity burned in any one pile should never exceed one pound. Use an ignition train of slow burning combustible material so that the person may retreat to a safe distance before powder is ignited.

Considerations for Storage of Smokeless Powder

Smokeless powder is intended to function by burning, so it must be protected against accidental exposure to flame, sparks or high temperatures.

For these reasons, it is desirable that storage enclosures be made of insulating materials to protect the powder from external heat sources.

Once smokeless powder begins to burn, it will normally continue to burn (and generate gas pressure) until it is consumed.

D.O.T. approved containers are constructed to open up at low internal pressures to avoid the effects normally produced by the rupture or bursting of a strong container.

Storage enclosures for smokeless powder should be constructed in a similar manner:

1. Of fire-resistant and heat-insulating materials to protect contents from external heat.
2. Sufficiently large to satisfactorily vent the gaseous products of combustion which would result if the quantity of smokeless powder within the enclosure accidentally ignited.

If a small, tightly enclosed storage enclosure is loaded to capacity with containers of smokeless powder, the walls

of the enclosure will expand or move outwards to release the gas pressure - if the powder in storage is accidentally ignited.

Under such conditions, the effects of the release of gas pressure are similar or identical to the effects produced by an explosion.

Hence only the smallest practical quantities of smokeless powder should be kept in storage, and then in strict compliance with all applicable regulations and recommendations of the National Fire Protection Association.

Recommendations for Storage of Smokeless Powder

STORE IN A COOL, DRY PLACE. Be sure the storage area selected is free from any possible sources of excess heat and is isolated from open flame, furnaces, hot water heaters, etc. Do not store smokeless powder where it will be exposed to the sun's rays. Avoid storage in areas where mechanical or electrical equipment is in operation. Restrict from the storage areas heat or sparks which may result from improper, defective or overloaded electrical circuits.

DO NOT STORE SMOKELESS POWDER IN THE SAME AREA WITH SOLVENTS, FLAMMABLE GASES OR HIGHLY COMBUSTIBLE MATERIALS. STORE ONLY IN DEPARTMENT OF TRANSPORTATION APPROVED CONTAINERS.

Do not transfer the powder from an approved container into one which is not approved.

DO NOT SMOKE IN AREAS WHERE POWDER IS STORED OR USED. Place appropriate "NO SMOKING" signs in these areas.

DO NOT SUBJECT THE STORAGE CABINET/SHOULD BE CONSTRUCTED OF INSULATING MATERIALS AND WITH A WEAK WALL, SEAMS OR JOINTS TO PROVIDE AN EASY MEANS OF SELFVENTING.

DO NOT KEEP OLD OR SALVAGED POWDERS. Check old powders for deterioration regularly. Destroy deteriorated powders immediately.

OBEY ALL REGULATIONS REGARDING QUANTITY AND METHODS OF STORING. Do not store all your powders in one place. If you can, maintain separate storage locations. Many small containers are safer than one or more large containers.

KEEP YOUR STORAGE AND USE AREA CLEAN. Clean up spilled powder promptly. Make sure the surrounding area is free of trash or other readily combustible materials.

The above information has been provided with permission from SAAMI: SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE, INC. P.O. Box 838, Branford, CT 06405.

Reloading Safety

Reloading is an enjoyable and rewarding hobby that is easily conducted with safety. But like many other human endeavours, carelessness or negligence can make reloading hazardous. The essence of reloading safety is proper handling and storage of primers and powder. As important is strict following of the instructions given by the manufacturers of the reloading equipment as well as the reloading components.

Before you get started, read the safety rules below and keep them in mind whenever reloading. Attention paid to detail and patience ensures safety and quality!

- Reload only when you can give it your undivided attention. **Do not reload**, when fatigued or ill. Develop your own reloading routine to avoid mistakes. Avoid haste, load at a leisurely place and keep in mind that **absolutely no reloading under the influence of alcohol or drugs!**
- Always wear proper eye protection. It is an unnecessary risk to reload without safety glasses.
- Store powder and primers out of reach of children and away from heat and open fire. **Follow the manufacturer's instructions on your powder canister. Never smoke during a reloading session!**
- Keep no more powder than needed available. Immediately return the unused powder to its original factory container to preserve its identity and usable life time.
- Do not use any powder unless its identity is positively known. Scrap all unidentified powders according to the manufacturer's instructions on your powder canister. **Keep in mind that the trial-and-error method may lead to serious injury!**
- **Do not store primers in bulk! Doing so will create a bomb!** Bulk primers will very likely mass detonate. The blast of a few hundred primers corresponds to a hand grenade in a room! Do not force primers in any circumstances. Take special care when filling and handling auto primer feed tubes. Keep primers in their original factory packing until used. Return unused primers to their original packing.
- Do not use primers if their identity is lost. Discard them according to the manufacturer's instructions.
- Start loading with the starting load according to the loading data. If there is no indication of the starting load, use 15% lower charge than the listed maximum load. Increase the charge using small steps watching for overpressure signs from the primer and the case head at each step. **If you detect overpressure signs immediately stop shooting and reduce the charge.** Disassemble always the defected cartridges. **NEVER EXCEED THE MAXIMUM LOADS!**
- Check visually the powder level in the cases so you are absolutely sure that you have no double powder charge. When a double powder charge is fired it may result in a gun damage, personal injury, even death.
- If you change the lot of any component or if you change any of the components of your reload, you must develop your load from the starting load again. A different component as well as a component from a different manufacturing lot may cause changes in cartridge pressure.
- You must absolutely follow the given cartridge overall lengths (C.O.L.) according to the reloading tables. The change in the bullet seating depth has a significant influence on the cartridge pressure.
- **Never reduce loads under the listed starting load.**
- Keep your reloading bench in good order. Clean up spilled powder and primers promptly and completely. Remember that the reloading bench is not a temporary store for other tools, used car spare parts etc.
- Use your reloading equipment according to the manufacturer's recommendations. Study the instructions carefully and don't hesitate to ask, if you don't understand everything.
- **Be safe, be conscientious!**

Reloading Safety

LEAD EXPOSURE

A continuous lead exposure has been found out to create lead accumulation to living bodies, specially to the nervous system causing little by little serious physical impairment. Some unused reloading components as well as fired cases can contain lead or lead compounds, it is possible to a reloader to get exposed during reloading. Primers and bullets contain lead and it may be present as a residue in fired cartridge cases, too.

There are different ways lead may enter the body. However, the two most common are considered to be the mouth and the breathing. Therefore with simple precautions described underneath the possible lead exposure and its dangerous consequences can be avoided.

- **WASH YOUR HANDS** thoroughly with warm water and soap after shooting or reloading.
- **DO NOT EAT OR DRINK** during a reloading session. When handling fired cartridge cases the residual containing lead most likely gets to your hands. Therefore eating something requiring a straight hand contact during a reloading session hazards the reloader to lead exposure. Keep your hands away from your nose or your mouth during a reloading session.
- **KEEP GOOD HOUSEHOLD AT YOUR RELOADING SITE.** Regular cleaning prevents the accumulation of residuals. Use a damp cloth or mop to clean up the reloading bench as well as the floor underneath. **DO NOT USE A VACUUM CLEANER!** The use of it dues to a potential risk of exposure because of spilled powder it collects up. Furthermore an ordinary vacuum cleaner more spreads than collects up the dust containing residuals. Do not use any carpet at your reloading site. Carpet is hard to keep dust-free and it can create static electricity that can accidentally fire a primer.
- **PROTECT YOUR BREATHING AGAINST THE DUST IN THE RELOADING AREA.** When using a dry cleaning media in tumbling the cartridge cases keep in mind that the lead residual from the fired cases moves to the dry cleaning media, where it accumulates by use. Wear always a dust mask when pouring the dry cleaning media out of the tumbler and be careful not to spill the media on your reloading bench.

RIFLE RELOADING DATA

DISCLAIMER

All of this reloading information has been provided by Nexplo Vihtavuori Oy and Nammo Lapua Oy. The data given here were obtained in laboratory conditions following strictly the CIP (Commission International Permanente) June 13, 1990, November 9, 1993 and August 6, 1998 rules. The listed maximum loads have been determined according to the CIP/SAAMI maximum pressure specifications, whichever is lower.

These test methods have been deemed to be safe throughout the world. Pressure is measured at the case mouth or from inside the case according to the CIP. The loads published here do not exceed the maximum pressure introduced by the CIP. **DO NOT ATTEMPT ANY EXTRAPOLATIONS. PLEASE FOLLOW THE DATA AS WRITTEN.**

Before starting the reloading process see the Reloading Safety Rules. Because Nammo Lapua Oy has no control over either handling or storage of the reloading components as well as over the entire reloading process, Nammo Lapua Oy cannot accept any liability for the possible effects of the use of Lapua and/or Vihtavuori reloading components.

The load development is done according to the methods described in Vihtavuori Reloading Manual. For that as well as further reloading information see Vihtavuori Reloading Manual.

.17 Remington

Test barrel: 560 mm, 1 in 16" twist
 Primers: Small Rifle
 Cases: Remington, trim-to length 45.40 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]		
1.6	25	HP	Remington 54.5	N135			1.48	22.8	1230	

5.6 x 35R

Test barrel: 560 mm, 1 in 16" twist
 Primers: Small Rifle
 Cases: Sako, trim-to length 35.30 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]		
2.6	40	FMJ	Sako 43.3	N110			0.55	8.5	750	

.220 Russian

Test barrel: 550 mm, 1 in 14" twist
 Primers: Small Rifle
 Cases: LAPUA, trim-to length 38.50 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]		
2.8	43	FMJ	Sako 49.0	N120			1.33	20.5	1110	

NOTE!

WHEN ONLY THE MAXIMUM LOADS ARE SHOWN IN THE TABLES ABOVE START LOADING WITH APPROXIMATELY 15 % SMALLER POWDER CHARGE.

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.22 Hornet

Test barrel: 600 mm, 1 in 16" twist
Primers: Small Rifle
Cases: Sako, trim-to length 35.40 mm

Bullet					Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
2.6	40	Spire Point	Speer	43.5	N110	0.50	7.7	700	0.62	9.6	788
2.9	45	Spitzer	Speer	43.5	N110	0.46	7.1	642	0.57	8.8	723
3.2	50	Spitzer	Speer	43.5	N110	0.46	7.1	598	0.54	8.3	672
					N120	0.60	9.3	598	0.69	10.6	682
3.6	55	Spitzer	Speer	43.5	N110	0.40	6.2	551	0.50	7.7	623
					N120	0.57	8.8	561	0.66	10.2	653

.222 Remington

Test barrel: 580 mm, 1 in 14" twist
Primers: Small Rifle
Cases: LAPUA, trim-to length 43.00 mm

Bullet					Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
2.6	40	Spire Point	Speer	53.0	N110	0.93	14.4	907	1.05	16.2	977
2.6	40	Hornet	Sierra	52.0	N120	1.30	20.1	991	1.35	20.8	1028
2.6	40	Spire Point	Speer	52.0	N120	1.29	19.9	973	1.38	21.3	1051
				52.5	N130	1.40	21.6	973	1.51	23.3	1047
				52.0	N133	1.48	22.8	984	1.63	25.2	1072
2.9	45	Spitzer	Speer	53.0	N110	0.88	13.6	848	1.00	15.4	917
					N120	1.25	19.3	925	1.34	20.7	993
2.9	45	Hornet	Hornady	53.6	N130	1.41	21.8	951	1.50	23.1	1018
2.9	45	Spitzer	Speer	53.0	N133	1.47	22.7	943	1.57	24.2	1015
3.2	50	SXSP	Hornady	53.8	N120	1.21	18.7	876	1.30	20.1	942
					N130	1.33	20.5	889	1.43	22.1	958
					N133	1.44	22.2	905	1.55	23.9	980
					N135	1.40	21.6	831	1.52	23.5	922
3.6	55	SP	Sako	54.2	N120	1.17	18.1	834	1.27	19.6	901
3.6	55	FMJBT	Hornady	53.8	N130	1.29	19.9	854	1.39	21.5	922
3.6	55	SP	Sako	54.2	N133	1.41	21.8	871	1.51	23.3	934
					N135	1.46	22.5	866	1.51	23.3	899
3.9	60	HP	Hornady	54.0	N120	1.11	17.1	779	1.23	19.0	850
				53.8	N130	1.25	19.3	805	1.37	21.1	877
				54.0	N133	1.35	20.8	820	1.46	22.5	892
					N135	1.40	21.6	836	1.52	23.5	868
4.5	69	HPBT	Sierra*	54.0	N130	1.18	18.2	749	1.26	19.4	805
					N133	1.27	19.6	768	1.36	21.0	820
					N135	1.31	20.2	772	1.43	22.1	831
					N140	1.44	22.2	778	1.53	23.6	837

*) The test barrel rifle twist 1 in 7"

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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.223 Remington

Test barrel: 620, 1 in 12" twist

Primers: Small Rifle

Cases: LAPUA, trim-to length 44.50 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
2.6	40	Spire Point	Speer	52.7	N120	1.45	22.4	1028	1.56	24.1	1109
					N130	1.58	24.4	1036	1.70	26.3	1123
					N133	1.62	25.0	1020	1.74	26.9	1102
2.9	45	Spitzer	Speer	54.0	N120	1.41	21.8	971	1.52	23.5	1055
					N130	1.52	23.5	986	1.66	25.6	1070
					N133	1.61	24.8	989	1.75	27.0	1086
					N135	1.65	25.5	971	1.74	26.9	1035
3.2	50	TNT-HP	Speer	57.0	N120	1.37	21.1	929	1.50	23.1	1010
					N130	1.49	23.0	944	1.61	24.8	1027
					N133	1.59	24.5	949	1.70	26.2	1036
					N135	1.62	25.0	938	1.72	26.5	1016
3.6	55	FMJBT	Hornady	57.0	N120	1.27	19.6	860	1.46	22.5	955
					N130	1.43	22.1	893	1.56	24.1	981
					N133	1.48	22.8	892	1.64	25.3	985
					N135	1.58	24.4	909	1.73	26.7	996
					N140	1.64	25.3	878	1.74	26.9	939
					N130	1.38	21.3	852	1.54	23.8	934
3.9	60	HP	Hornady	57.0	N133	1.45	22.4	845	1.62	25.0	938
					N135	1.55	23.9	872	1.68	25.9	937
					N140	1.61	24.8	841	1.72	26.5	900
					N135	1.40	21.6	847	1.49	23.0	905
4.5	69	Scenar	Lapua*	57.4	N140	1.48	22.8	835	1.63	25.2	917
					N540	1.56	24.1	878	1.70	26.2	969
					N133	1.33	20.5	782	1.49	23.0	862
4.5	69	HPBT	Sierra*	57.0	N140	1.53	23.6	802	1.71	26.4	891
					N135	1.35	20.8	751	1.52	23.5	832
4.9	75	BTHP	Hornady*	57.4	N140	1.47	22.7	754	1.64	25.3	846
					N135	1.35	20.8	751	1.52	23.5	832
					N540	1.52	23.5	766	1.68	25.9	856

*) The test barrel rifle twist 1 in 7".

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.222 Remington Magnum

Test barrel: 580 mm, 1 in 14" twist
 Primers: Small Rifle
 Cases: Remington, trim-to length 46.80 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.2	50	SXSP	Hornady	57.5	N120	1.42	21.9	950	1.52	23.5	1024
					N133	1.68	24.7	977	1.77	27.3	1056
3.6	55	SP	Sako	58.0	N120	1.39	21.5	903	1.49	23.0	977
					N133	1.63	25.2	933	1.71	26.4	1008
					N135	1.68	25.9	935	1.80	27.8	1002
3.9	60	HP	Hornady	57.9	N133	1.59	24.5	890	1.68	25.9	964
					N135	1.64	25.3	895	1.75	27.0	952
4.5	69	HPBT	Sierra*	58.0	N133	1.48	22.8	824	1.58	24.4	887
					N135	1.52	23.5	837	1.64	25.3	900

*) The test barrel rifle twist 1 in 7".

22 PPC - USA

Test barrel: 610 mm, 1 in 14" twist
 Primers: Small Rifle
 Cases: Sako, trim-to length 38.30 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.4	52	HPBT	Sierra	51.4	N120	1.42	21.9	966	1.47	22.7	992
					N130	1.41	21.8	922	1.57	24.2	1016
					N133	1.50	23.1	941	1.67	25.8	1032
					N135	1.62	25.0	954	1.80	27.8	1049
3.6	55	Spitzer	Speer	51.8	N130	1.41	21.8	898	1.58	24.4	976
					N133	1.48	22.8	913	1.65	25.5	985
					N135	1.65	25.5	942	1.83	28.2	1047

5.6 x 50 Magnum

Test barrel: 600 mm, 1 in 13" twist
 Primers: Small Rifle
 Cases: RWS, trim-to length 49.80 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
2.9	45	FMJ	Sako	61.0	N135				1.86	28.7	1075
3.2	50	SP	Sako	61.2	N135				1.83	28.2	1035
					N140				1.85	28.5	1160
3.6	55	SP	Sako	61.2	N140				1.81	27.9	1020
4.5	70	SP	Speer	61.3	N140				1.67	25.8	900

NOTE!

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5.6 x 50R Magnum

Test barrel: 580 mm, 1 in 13½" twist
 Primers: Small Rifle
 Cases: RWS, trim-to length 49.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.2	50	FMJ	Sako	61.0	N133				1.73	26.7	1010
3.6	55	SP	Sierra	61.0	N135				1.68	25.9	975
					N140				1.77	27.3	960
3.9	60	SP	Hornady	61.0	N140				1.69	26.1	930
4.1	63	SP	Sierra	61.0	N140				1.68	25.9	900
4.5	70	SP	Speer	61.0	N140				1.59	24.5	860

.22-250 Remington

Test barrel: 580 mm, 1 in 14" twist
 Primers: Large Rifle
 Cases: Sako, trim-to length 48.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
2.9	45	Spitzer	Speer	58.9	N130	2.03	31.3	1091	2.24	34.5	1184
					N135	2.24	34.6	1086	2.43	37.5	1184
					N140	2.37	36.6	1090	2.60	40.1	1201
3.2	50	Spitzer	Speer	59.6	N130	1.79	27.6	936	2.05	31.6	1074
					N135	1.96	30.3	963	2.23	34.4	1091
					N140	2.08	32.1	955	2.41	37.2	1094
					N150	2.14	33.0	956	2.48	38.3	1092
3.6	55	Spitzer	Speer	59.6	N135	2.01	31.0	959	2.23	34.4	1055
					N140	2.17	33.5	971	2.36	36.5	1062
					N150	2.23	34.4	972	2.47	38.1	1073
3.9	60	HP	Hornady	59.6	N140	2.05	31.7	913	2.29	35.3	1010
					N150	2.09	32.2	907	2.37	36.5	1011
4.5	69	HPBT	Sierra*	59.6	N140	1.93	29.8	846	2.19	33.8	938
					N540	1.84	28.4	832	2.24	34.6	983
					N150	1.98	30.6	846	2.27	35.0	943
					N550	2.00	30.8	852	2.41	37.2	1007
					N160	2.38	36.7	867	2.64	40.7	962
					N560	2.23	34.4	838	2.78	42.9	1009

*) The test barrel rifle twist 1 in 7"

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.220 Swift

Test barrel: 610 mm, 1 in 14" twist

Primers: Large Rifle

Cases: Remington, trim-to length 55.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.2	50	FMJ	Sako	68.0	N140				2.50	38.6	1190
3.6	55	SP	Sako	68.0	N140				2.40	37.0	990
3.6	55	SP	Norma	68.0	N160				2.79	43.1	1130

5.6 x 57

Test barrel: 600 mm, 1 in 10" twist

Primers: Large Rifle

Cases: RWS, trim-to length 56.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.2	50	SP	Sierra	67.0	N140				2.58	39.8	1160
3.6	55	SP	Sako	67.0	N140				2.49	38.4	1110
4.8	74	FMJ	RWS	67.7	N160				2.64	40.7	995

5.6 x 52R

Test barrel: 600 mm, 1 in 10¹/₂" twist

Primers: Large Rifle

Cases: Norma, trim-to length 51.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
4.6	71	SP	RWS	63.3	N135				1.54	23.8	835
					N140				1.66	25.6	865
					N160				1.96	30.2	830

6 PPC - USA

Test barrel: 580 mm, 1 in 14" twist

Primers: Small Rifle

Cases: Sako, trim-to length 38.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
4.4	68	HPFB	Euber	53.6	N130	1.52	23.4	842	1.68	25.9	927
					N133	1.63	25.1	839	1.82	28.1	949
4.5	70	HPBT	Sierra	53.6	N120	1.39	21.5	809	1.55	23.9	901
					N130	1.52	23.5	836	1.69	26.1	925
					N133	1.59	24.5	825	1.79	27.6	934

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6mm BR Norma

Test barrel: 650 mm, 1 in 8" twist
 Primers: Small Rifle
 Cases: LAPUA, trim-to length 38.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
4.5	70	HPBT	Sierra	53.0	N133	1.54	23.7	821	1.83	29.2	946
					N135	1.73	26.7	852	2.15	33.2	997
5.0	77	Silver Jacket Scenar	LAPUA	60.0	N133	1.85	28.5	882	2.01	31.0	962
					N140	2.05	31.7	898	2.20	33.9	980
					N540	2.14	33.1	912	2.31	35.6	997
					N140	1.51	23.3	723	1.89	29.2	856
5.8	90	FMJ	LAPUA	60.0	N540	1.58	24.3	711	2.11	32.6	918
					N135	1.85	28.6	828	2.04	31.5	904
5.8	90	Silver Jacket Scenar	LAPUA	60.0	N140	1.96	30.2	845	2.12	32.7	920
					N540	2.02	31.2	852	2.19	33.9	934
					N140	1.50	23.2	685	1.85	28.5	813
6.5	100	Mega	LAPUA	55.3	N540	1.65	25.5	709	1.98	30.6	845
					N140	1.53	23.6	685	1.84	28.4	805
6.8	105	Scenar	LAPUA	60.0	N540	1.59	24.5	684	1.93	29.8	828
					N140	1.83	28.2	761	2.02	31.1	841
6.8	105	Silver Jacket Scenar	LAPUA	60.0	N150	1.85	28.5	767	2.05	31.6	839
					N540	1.88	29.0	775	2.08	32.2	859
					N140	1.83	28.2	761	2.02	31.1	841

.243 Winchester

Test barrel: 580, 1 in 10" twist
 Primers: Large Rifle
 Cases: LAPUA, trim-to length 51.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
4.5	70	SXSP	Hornady	67.0	N133	2.16	33.3	940	2.39	36.9	981
					N135	2.36	36.4	901	2.62	40.4	1009
					N140	2.51	38.7	915	2.80	43.2	1033
					N150	2.57	39.7	920	2.86	44.1	1031
					N160	2.99	46.1	916	3.32	51.2	1052
5.2	80	FMJ	Hornady	67.0	N135	2.18	33.6	865	2.40	37.0	928
					N140	2.30	35.5	870	2.55	39.4	942
					N150	2.27	35.0	877	2.52	38.9	935
					N160	2.83	43.7	874	3.15	48.6	982
5.6	87	HPBT	Hornady	68.0	N140	2.22	34.3	835	2.48	38.3	907
					N150	2.19	33.8	840	2.46	38.0	898
					N160	2.72	42.0	836	3.02	46.6	940
					N560	2.80	43.2	881	3.11	48.0	960
5.8	90	FMJ	LAPUA	68.3	N150	1.51	23.3	712	2.13	32.8	886
					N550	1.98	30.6	791	2.53	39.0	959
					N160	2.02	31.1	794	2.65	40.9	953

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.243 Winchester

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
6.2	95	X	Barnes	68.8	N560	1.85	28.5	679	2.44	37.7	831
6.5	100	Mega	LAPUA	68.3	N150	1.53	23.6	693	2.10	32.4	874
					N550	2.13	32.8	782	2.76	42.0	975
					N160	2.33	35.9	809	2.78	42.8	940
6.5	100	SPBT	Hornady	67.3	N160	2.65	40.9	797	2.94	45.4	885
					N560	2.68	41.4	822	2.96	45.7	903
					N165	2.85	44.0	807	3.19	49.2	894
6.8	105	Spitzer	Speer	68.5	N160	2.28	35.2	744	2.54	39.2	803
					N560	2.28	35.2	758	2.52	38.9	829
6.8	105	Scenar	LAPUA*	68.3	N550	2.24	34.6	786	2.62	40.4	891
					N160	2.36	36.4	786	2.77	42.8	895
					N165	2.74	42.2	803	3.14	48.5	918

*) The test barrel rifle twist 1 in 8"

6mm Remington

Test barrel: 570 mm, 1 in 9" twist

Primers: Large Rifle

Cases: Remington, trim-to length 56.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
4.5	70	HPBT	Sierra	71.4	N135	2.37	36.6	944	2.62	40.4	1012
					N140	2.57	39.7	960	2.81	43.4	1036
					N150	2.54	39.2	959	2.81	43.4	1029
					N160	3.06	47.2	951	3.39	52.3	1073
5.2	80	FMJ	Hornady	71.5	N135	2.12	32.7	852	2.33	36.0	904
					N140	2.30	35.5	889	2.54	39.2	941
					N150	2.22	34.3	869	2.46	38.0	925
					N160	2.86	44.1	924	3.17	48.9	989
5.6	87	SP	Hornady	71.5	N140	2.23	34.4	836	2.46	38.0	889
					N150	2.20	34.0	836	2.42	37.3	882
					N160	2.88	44.4	877	3.18	49.1	957
					N165	3.08	47.5	899	3.41	52.6	948
6.5	100	SPBT	Hornady	71.5	N160	2.70	41.7	832	2.97	45.8	892
					N165	2.81	43.4	837	3.12	48.1	896
6.8	105	Spitzer	Speer	71.5	N165	2.74	42.3	831	3.01	46.5	880

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.240 Weatherby Magnum

Test barrel: 600 mm, 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Norma, trim-to length 63.25 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
4.9	75	HPFB	Hornady	78.1	N150	2.73	42.1	939	3.20	49.3	1088
					N550	3.02	46.6	968	3.41	52.7	1123
					N160	3.17	48.9	949	3.54	54.7	1106
5.0	77	HP	LAPUA	78.1	N150	2.79	43.0	932	3.18	49.1	1080
					N550	3.03	46.7	956	3.39	52.3	1106
					N160	3.17	48.9	948	3.53	54.5	1095
5.8	90	Scenar	LAPUA	78.1	N550	2.74	42.3	881	3.25	50.2	1024
					N160	2.98	46.0	879	3.44	53.1	1025
					N165	3.24	50.1	885	3.74	57.7	1043
6.5	90	Mega	LAPUA	78.1	N550	2.73	42.1	839	3.19	49.2	977
					N160	2.86	44.1	846	3.29	50.8	865
					N165	3.18	49.1	853	3.64	56.1	995
6.8	105	Spitzer	Speer	77.8	N160	2.52	38.9	785	3.20	49.4	947
					N560	3.00	46.3	828	3.50	54.0	973
					N165	3.08	47.5	837	3.61	55.8	980

.25-06 Remington

Test barrel: 580 mm, 1 in 10" twist
Primers: Large Rifle
Cases: Sako, trim-to length 63.10 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
5.6	87	SPBT	Speer	79.3	N140	2.11	32.6	889	2.73	42.1	959
					N150	2.27	35.1	840	2.90	44.7	978
					N160	2.92	45.0	885	3.54	54.6	1017
					N165	3.27	50.4	907	3.93	60.7	1046
6.5	100	SPBT	Speer	81.2	N140	2.49	38.4	844	2.88	44.5	925
					N150	2.57	39.7	856	2.97	45.8	930
					N160	3.16	48.8	880	3.55	54.8	966
					N560	2.92	45.0	847	3.58	55.2	988
					N165	3.31	51.1	889	3.80	58.6	979
7.8	120	Spizer	Speer	80.2	N170	3.25	50.2	831	4.04	62.3	973
					N150	1.73	26.7	642	2.31	35.6	774
					N160	2.24	34.6	710	2.93	45.2	842
					N560	2.55	39.4	744	3.23	49.8	888
					N165	2.43	37.5	731	3.12	48.1	850
7.8	120	HPBT	Sierra	80.0	N170	2.92	45.1	759	3.58	55.2	871
					N160	2.55	39.3	745	3.08	47.6	869
					N560	2.73	42.1	769	3.32	51.3	901
					N165	2.83	43.6	774	3.37	52.0	887
					N170	3.08	47.6	766	3.78	58.6	902

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
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.260 Remington

Test barrel: 550 mm, 1 in 9" twist
 Primers: Large Rifle
 Cases: Necked-up LAPUA .243 Winchester,
 trim-to length 51.0 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
6.5	100	HPFB	Sierra	67.5	N140	2.19	33.8	829	2.57	39.6	940
					N150	2.20	33.9	817	2.59	39.9	925
					N540	2.29	35.3	834	2.65	40.8	933
7.0	108	Scenar	LAPUA	71.0	N150	2.18	33.6	789	2.52	38.9	891
					N540	2.26	34.8	801	2.57	39.6	903
					N160	2.56	39.4	809	2.90	44.8	925
7.8	120	SP	Speer	71.0	N540	2.12	32.8	745	2.46	38.0	850
					N550	2.26	34.8	765	2.62	40.5	861
					N160	2.35	36.3	749	2.78	42.9	863
9.0	139	Scenar	LAPUA	71.0	N550	2.03	31.3	679	2.44	37.7	791
					N160	2.20	33.9	684	2.61	40.2	791
					N560	2.46	38.0	693	2.84	43.8	809
10.0	155	Mega	LAPUA	69.5	N160	2.04	31.5	650	2.39	36.8	732
					N560	2.24	34.1	641	2.70	41.6	757
					N165	2.40	37.1	664	2.81	43.3	778

6.5 x 55 Swedish Mauser

Test barrel: 630", 1 in 8 1/2" twist
 Primers: Large Rifle
 Cases: LAPUA, trim-to length 54.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
5.0	77	SP	Norma	66.5	N133				2.75	42.4	1030
					N135				2.86	44.1	1030
					N140				2.92	45.1	1035
5.2	80	FMJ	Norma	66.5	N140				2.88	44.4	1000
5.5	85	HP	Sierra	71.1	N150	2.84	43.8	915	2.99	46.1	991
6.5	100	HP	Sierra	72.4	N140	2.59	40.0	839	2.74	42.3	890
					N540	2.58	39.8	823	2.82	43.5	908
					N150	2.64	40.7	832	2.81	43.4	891
6.5	100	HP	Sierra	72.4	N550	2.76	42.6	850	2.99	46.1	932
					N160	3.07	47.4	850	3.28	50.6	916
					N160	2.99	46.1	838	3.30	50.9	922
6.5	100	FMJ	LAPUA	70.0	N160				3.30	50.9	922

NOTE!

WHEN ONLY THE MAXIMUM LOADS ARE SHOWN IN THE TABLES ABOVE START LOADING WITH APPROXIMATELY 15 % SMALLER POWDER CHARGE.

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 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

6.5 x 55 Swedish Mauser

Bullet		Powder			Starting load			Maximum load									
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight		Velocity	Weight		Velocity						
						[g]	[grs]	[m/s]	[g]	[grs]	[m/s]						
7.0	108	Scenar	LAPUA	78.0	N140	2.37	36.6	771	2.59	40.0	849						
						N540	2.43	37.5	797	2.65	40.9	877					
						N150	2.56	39.5	830	2.73	42.1	881					
						N550	2.66	41.0	829	2.88	44.4	912					
						N160	3.04	46.9	849	3.20	49.4	903					
						N560	3.12	48.1	846	3.35	51.7	918					
						N165	3.16	48.8	860	3.32	51.2	914					
7.0	108	Silver Jacket Scenar	LAPUA	80.0	N140	2.42	37.3	822	2.70	41.7	898						
						N540	2.52	38.9	825	2.80	43.1	920					
						N150	2.49	38.4	817	2.81	43.4	907					
7.8	120	HPBT	Sierra	76.8	N140	2.26	34.9	716	2.56	39.5	800						
						N540	2.38	36.7	754	2.64	40.7	833					
						N150	2.35	36.3	729	2.63	40.6	809					
						N550	2.56	39.5	775	2.81	43.4	863					
						N160	2.89	44.6	795	3.14	48.5	860					
8.0	123	Scenar	LAPUA	80.0	N560	3.03	46.8	792	3.20	49.4	854						
						N140	2.25	34.7	699	2.61	40.3	810					
							N540	2.34	36.2	708	2.70	41.7	826				
8.0	123	Silver Jacket Scenar	LAPUA	80.0	N150	2.37	36.6	703	2.71	41.8	817						
						N150	2.40	37.1	778	2.68	41.3	848					
						N550	2.41	37.2	766	2.82	43.5	880					
8.4	130	HPBT	Norma	80.0	N160	2.75	42.4	790	2.92	45.1	840						
						N140	2.19	33.8	698	2.47	38.1	775					
							N540	2.24	34.6	718	2.52	38.9	795				
						N150	2.19	33.8	691	2.51	38.7	772					
							N550	2.46	38.0	733	2.74	42.3	820				
						9.0	139	HPBT	Norma	78.0	N160	2.70	41.7	730	2.99	46.1	811
												N560	2.94	45.4	770	3.20	49.4
N150	2.19	33.8	665	2.49	38.4							749					
	N550	2.45	37.8	715	2.66	41.0	787										
9.0	139	Scenar	LAPUA	79.4	N160	2.65	40.9	707	2.90	44.8	782						
						N560	2.79	43.1	716	3.10	47.8	812					
							N165	2.93	45.2	734	3.18	49.1	806				
						N150	2.07	31.9	641	2.40	37.0	720					
							N550	2.38	36.7	693	2.60	40.1	767				
9.0	139	Scenar	LAPUA	79.4	N160	2.67	41.2	720	2.88	44.4	785						
						N560	2.80	43.2	735	3.04	46.9	809					
							N165	2.88	44.4	731	3.15	48.6	803				

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

6.5 x 55 Swedish Mauser

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
9.0	139	Silver Jacket Scenar	LAPUA	80.0	N550	2.37	36.6	710	2.68	41.3	822
					N160	2.54	39.2	746	2.88	44.4	807
					N560	2.73	42.1	734	3.10	47.8	837
9.1	140	HPBT	Sierra	78.5	N150	2.15	33.2	664	2.45	37.8	737
					N550	2.41	37.2	700	2.65	40.9	776
					N160	2.74	42.3	730	2.96	45.7	794
					N560	2.86	44.1	748	3.08	47.5	818
					N165	2.92	45.1	735	3.18	49.1	807
					N170	2.98	46.0	679	3.31	51.1	770
9.3	144	FMJBT	LAPUA	79.0	N150	2.08	32.1	670	2.24	34.6	713
					N160	2.68	41.4	727	2.86	44.1	769
					N560	2.80	43.2	725	3.08	47.5	807
					N165	2.75	42.4	731	2.94	46.0	775
					N170	2.98	46.0	679	3.31	51.1	770
					N150	2.02	31.2	624	2.27	35.0	684
10.0	155	HPBT	Sierra	76.0	N550	2.28	35.2	658	2.54	39.2	727
					N160	2.54	39.2	666	2.82	43.5	740
					N560	2.57	39.7	668	2.86	44.1	749
10.0	155	HPBT	Sierra	79.0	N165	2.65	40.9	657	3.00	46.3	739
					N170	2.77	42.7	638	3.21	49.5	742
					N560	2.61	40.3	660	3.00	46.3	748
10.0	155	Mega	LAPUA	73.0	N165	2.62	40.4	655	3.05	47.1	733
					N140				2.39	36.9	715
10.4	160	RN	Hornady	77.1	N160				2.91	44.9	765

6.5 - .284 Norma

Test barrel: 625 mm, 1 in 8½" twist
 Primers: Large Rifle
 Cases: Lapua, trim-to length 55.00 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
7.0	108	Scenar	LAPUA	79.0	N160	3.30	50.9	939	3.56	54.9	992
					N560	3.63	56.0	941	3.85	59.4	997
					N165	3.70	57.1	935	3.90	60.2	982
7.0	108	Silver Jacket Scenar	LAPUA	79.0	N550	3.08	47.5	911	3.40	52.5	988
					N160	3.31	51.1	933	3.64	56.2	1001
					N560	3.61	55.7	912	3.87	59.7	974

NOTE!

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 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

6.5 - .284 Norma

Test barrel: 625 mm, 1 in 8½" twist
 Primers: Large Rifle
 Cases: Lapua, trim-to length 55.00 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
8.0	123	Scenar	LAPUA	79.0	N160	2.80	43.2	812	3.40	52.5	918
						3.42	52.8	871	3.57	55.1	942
						3.14	48.5	848	3.74	57.7	931
8.0	123	Silver Jacket Scenar	LAPUA	79.0	N160	2.98	46.0	828	3.43	52.9	921
						3.54	54.6	881	3.79	58.5	963
						3.61	55.7	848	3.88	59.9	946
9.0	139	Scenar	LAPUA	79.0	N160	2.87	44.3	804	3.07	47.4	852
						3.28	50.6	850	3.50	54.0	892
						2.89	44.6	791	3.26	50.3	847
9.0	139	Silver Jacket Scenar	LAPUA	79.0	N160	2.78	42.9	776	3.27	50.5	855
						3.31	51.1	813	3.57	55.1	901
						3.12	48.1	798	3.68	56.8	881

6.5 x 57

Test barrel: 600 mm, 1 in 8" twist
 Primers: Large Rifle
 Cases: RWS, trim-to length 56.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
5.5	85	HP	Sierra	73.0	N135				2.80	43.2	1025
6.5	100	SP	Hornady	76.6	N135				2.70	41.7	950
8.1	125	Partition	Nosler	81.0	N140				2.67	41.2	840
9.1	140	SP	Speer	81.5	N140				2.64	40.7	820
10.1	156	SP	Norma	81.5	N160				2.89	44.6	780
10.4	160	RN	Hornady	78.1	N160				2.85	44.0	730

6.5 x 57R

Test barrel: 600 mm, 1 in 8" twist
 Primers: Large Rifle
 Cases: RWS, trim-to length 56.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
5.5	85	HP	Sierra	73.0	N135				2.69	41.5	955
6.5	100	SP	Hornady	76.6	N135				2.62	40.4	880
8.1	125	Partition	Nosler	81.0	N140				2.53	39.0	800
9.1	140	Spitzer	Speer	81.5	N140				2.49	38.4	765
10.1	156	SP	Norma	81.5	N160				2.79	43.1	730

NOTE!

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6.5 x 68

Test barrel: 650 mm, 1 in 9½" twist
Primers: Large Rifle
Cases: RWS, trim-to length 67.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
6.8	105	SP	Nosler	82.5	N160				4.34	67.0	1020
8.1	125	Partition	Nosler	86.5	N160				4.15	64.0	955

.264 Winchester Magnum

Test barrel: 610 mm, 1 in 9" twist
Primers: Large Rifle Magnum
Cases: Remington, trim-to length 63.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
5.5	85	HP	Sierra	78.7	N140				3.72	57.4	1080
					N160				4.35	67.1	1150
9.1	140	FMJ	Hornady	82.7	N140				3.10	47.8	920
					N160				3.70	57.1	910
9.1	140	HPBT	Sierra	84.8	N160	3.01	46.5	770	3.54	54.6	858
					N560	3.13	48.3	789	3.72	57.4	888
10.4	160	FMJ	Norma	84.5	N160				3.65	56.3	820

.270 Winchester

Test barrel: 620 mm, 1 in 10" twist
Primers: Large Rifle
Cases: Remington, trim-to length 64.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
6.5	100	Spitzer	Speer	80.0	N150	2.95	45.5	910	3.22	49.7	960
					N160	3.68	56.8	927	4.09	63.1	1018
					N165	3.77	58.2	921	4.20	64.8	1005
8.4	130	SP	Remington	82.0	N160	3.34	51.5	847	3.60	55.6	905
					N560	3.56	54.9	856	3.85	59.4	925
8.4	130	SPBT	Speer	83.0	N165	3.48	53.7	838	3.84	59.3	907
9.7	150	Spitzer	Speer	82.0	N160	2.86	44.1	731	3.20	49.4	794
9.7	150	SP	Remington	82.0	N560	3.30	50.9	803	3.60	55.6	856
					N165	3.11	48.0	750	3.45	53.2	808
10.4	160	Partition	Nosler	84.6	N160	3.02	46.6	743	3.31	51.1	795
					N165	3.10	47.8	747	3.44	53.1	803

NOTE!

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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.270 Weatherby Magnum

Test barrel: 600 mm, 1 in 10" twist
 Primers: Large Rifle Magnum
 Cases: Norma, trim-to length 63.25 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	[grs]	Type	Mfg. C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
6.5	100	PSP	Remington 79.0	N550	4.19	64.7	1006	4.69	72.4	1134
				N160	4.49	69.4	1019	4.89	75.4	1122
				N165	4.97	76.6	1019	5.42	83.7	1130
8.4	130	PSPCL	Remington 82.2	N160	4.18	64.5	912	4.65	71.7	1010
				N165	4.49	69.3	903	4.97	76.6	1006
				N560	4.60	71.0	923	5.02	77.5	1012
8.7	135	HPBT	Sierra 83.0	N160	4.12	63.6	874	4.46	68.8	971
				N165	4.49	69.3	892	4.72	72.8	995
				N560	4.53	69.9	929	4.84	74.6	1018
9.7	150	Partition	Nosler 82.5	N560	4.29	66.2	874	4.63	71.5	960
				N165	4.20	64.9	848	4.73	73.0	952
				N170	4.61	71.2	853	5.16	79.7	962

NOTE: LOADS LESS THAN ABOVE LISTED STARTING LOADS MAY GENERATE EXCESSIVE CHAMBER PRESSURE AND MUST NOT BE USED!

7mm-08 Remington

Test barrel: 610 mm, 1 in 9 1/2" twist
 Primers: Large Rifle
 Cases: Remington, trim-to length 51.50 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	[grs]	Type	Mfg. C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
6.5	100	HP	Hornady 69.0	N130	2.40	37.0	870	2.64	40.7	945
				N133	2.53	39.0	886	2.80	43.2	955
				N135	2.68	41.4	877	2.95	45.5	971
				N140	2.75	42.4	869	3.06	47.2	971
				N150	2.88	44.4	890	3.20	49.4	982
7.8	120	Spitzer	Sierra 69.6	N135	2.51	38.7	798	2.77	42.7	882
				N140	2.66	41.0	807	2.94	45.4	897
				N150	2.73	42.1	818	3.04	46.9	904
9.1	140	Ballistic Tip	Nosler 69.6	N135	2.30	35.5	707	2.53	39.0	781
				N140	2.50	38.6	734	2.76	42.6	810
				N150	2.54	39.2	737	2.82	43.5	808
10.4	160	SPBT	Sierra 71.0	N140	2.36	36.4	690	2.61	40.3	753
				N150	2.38	36.7	691	2.64	40.7	747
				N160	2.97	45.8	738	3.25	50.2	813
10.9	168	HPBT	Sierra 71.0	N150	2.27	35.0	670	2.53	39.0	731
				N550	2.42	37.3	696	2.72	42.0	772
				N160	2.78	42.9	700	3.04	46.9	764
11.3	175	Mag-Tip	Speer 71.0	N140	2.13	32.9	615	2.35	36.3	669
				N150	2.07	31.9	595	2.28	35.2	647
				N160	2.55	39.4	640	2.79	43.1	700

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

7 x 57

Test barrel: 550 mm, 1 in 9 1/2" twist
 Primers: Large Rifle
 Cases: Sako, trim-to length 56.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
7.8	120	Spitzer	Sierra	76.5	N135	2.55	39.4	776	2.81	43.4	861
					N140	2.72	42.0	793	2.99	46.1	876
					N150	2.75	42.4	798	3.02	46.6	878
9.1	140	Ballistic Tip	Nosler	77.5	N140	2.47	38.1	708	2.75	42.4	783
					N150	2.58	39.8	729	2.83	43.7	792
10.4	160	SPBT	Sierra	77.5	N150	2.43	37.5	673	2.69	41.5	736
					N160	2.92	45.1	687	3.20	49.4	774
11.3	175	Mag-Tip	Speer	77.0	N160	2.63	40.6	630	2.97	45.8	707
					N165	2.89	44.6	655	3.21	49.5	719

7 x 57R

Test barrel: 550 mm, 1 in 9 1/2" twist
 Primers: Large Rifle
 Cases: RWS, trim-to length 56.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
7.8	120	Spitzer	Sierra	76.5	N135	2.45	37.8	743	2.70	41.7	826
					N140	2.57	39.7	745	2.86	44.1	836
					N150	2.63	40.6	764	2.89	44.6	840
9.1	140	Ballistic Tip	Nosler	77.5	N140	2.39	36.9	687	2.62	40.4	747
					N150	2.41	37.2	688	2.69	41.5	757
10.4	160	SPBT	Sierra	77.5	N150	2.31	35.6	642	2.54	39.2	701
					N160	2.78	42.9	646	3.08	47.5	739
11.3	175	Mag-Tip	Speer	77.0	N160	2.54	39.2	609	2.81	43.4	670
					N165	2.72	42.0	620	3.00	46.3	677

7 x 64

Test barrel: 610 mm, 1 in 10" twist
 Primers: Large Rifle
 Cases: Sako, trim-to length 63.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
5.1	79	SP	Sako	75.4	N120				2.70	41.7	1050
7.8	120	SP	Hornady	82.8	N140				3.31	51.1	970
					N160				3.88	59.9	985
8.0	123	SP	RWS	80.4	N140				3.30	50.9	950
					N160				3.85	59.4	935

NOTE!

WHEN ONLY THE MAXIMUM LOADS ARE SHOWN IN THE TABLES ABOVE START LOADING WITH APPROXIMATELY 15 % SMALLER POWDER CHARGE.

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

7 x 64

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
9.0	139	SP	Hornady	84.0	N140				3.15	48.6	880
10.0	155	SP	Hornady	83.8	N160				3.76	58.0	880
10.4	160	SP	Nosler	84.0	N160				3.71	57.3	885
11.0	170	SP	Sako	84.0	N160				3.66	56.5	860
11.3	175	SP	Hornady	82.8	N160				3.68	56.8	840

7mm Remington Magnum

Test barrel: 610 mm, 1 in 9" twist

Primers: Large Rifle Magnum

Cases: LAPUA, trim-to length 63.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	[grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	[grs]	Velocity [m/s]	Weight [g]	[grs]	Velocity [m/s]
6.5	100	HP	Hornady	81.0	N160	4.44	68.5	995	4.86	75.0	1088
					N560	4.29	66.2	954	5.02	77.4	1081
7.8	120	Spitzer	Sierra	83.0	N160	4.22	65.1	916	4.64	71.5	1004
					N165	4.48	69.2	909	4.94	76.3	1005
					N560	4.09	63.1	900	4.77	73.6	1012
9.4	145	SPBT	Speer	83.0	N160	3.64	56.2	809	4.06	62.6	884
					N560	3.80	58.6	850	4.22	65.2	931
					N165	3.98	61.4	827	4.39	67.7	902
10.4	160	Grand Slam	Speer	82.0	N160	3.32	51.3	751	3.65	56.3	806
					N560	3.43	53.0	794	3.81	58.8	860
					N165	3.57	55.1	767	3.93	60.7	825
10.4	160	Spitzer	Sierra	82.0	N160	3.42	52.7	743	3.91	60.3	828
					N165	2.71	41.8	655	3.97	61.2	825
					N560	3.21	49.6	737	4.18	64.4	870
10.9	168	HPBT	Sierra	83.5	N165	3.57	55.2	740	4.21	65.0	822
					N170	4.02	62.0	743	4.54	70.1	828
					N560	3.57	55.1	754	4.14	63.9	852
11.3	175	SBT	Sierra	83.5	N165	3.03	46.7	685	3.81	58.8	787
					N170	3.59	55.4	717	4.30	66.4	800
					N560	3.17	48.9	703	3.82	59.0	815

NOTE!

WHEN ONLY THE MAXIMUM LOADS ARE SHOWN IN THE TABLES ABOVE START LOADING WITH APPROXIMATELY 15 % SMALLER POWDER CHARGE.

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

7mm Weatherby Magnum

Test barrel: 660 mm, 1 in 9" twist
 Primers: Large Rifle Magnum
 Cases: Norma, trim-to length 64.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
6.5	100	HP	Hornady	81.5	N160	4.62	71.3	1037	5.10	78.7	1149
					N560	4.84	74.7	1049	5.30	81.9	1170
7.8	120	Spitzer	Sierra	82.5	N160	4.39	67.7	960	4.83	74.6	1057
					N165	4.76	73.5	973	5.20	80.3	1072
					N560	4.67	72.0	979	5.07	78.3	1079
10.4	160	Spitzer	Sierra	82.5	N160	3.96	61.1	828	4.39	67.8	912
					N165	4.29	66.2	838	4.69	72.4	924
					N560	4.14	63.9	842	4.53	69.9	927
10.9	168	HPBT	Sierra	81.5	N160	3.90	60.2	812	4.23	65.3	879
					N165	4.22	65.2	819	4.51	69.6	888
					N560	4.06	62.6	817	4.42	68.1	909

NOTE: LOADS LESS THAN ABOVE LISTED STARTING LOADS MAY GENERATE EXCESSIVE CHAMBER PRESSURE AND MUST NOT BE USED!

.30 Carbine

Test barrel: 460 mm, 1 in 10" twist
 Primers: Small Rifle
 Cases: Federal, trim-to length 32.60 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
6.5	100	Plinker	Speer	42.5	N110	0.86	13.3	595	0.94	14.5	647
7.1	110	Spire Point	Speer	42.5	N110	0.77	11.9	537	0.86	13.3	582

.30-30 Winchester

Test barrel: 510 mm, 1 in 12" twist
 Primers: Large Rifle
 Cases: Remington, trim-to length 51.60 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
6.8	105	HP	Speer	64.5	N130	1.90	29.4	742	2.11	32.5	813
					N133	2.11	32.6	775	2.35	36.3	843
8.5	130	FSP	Speer	64.7	N120	1.60	24.7	655	1.79	27.6	714
					N130	1.77	27.3	669	1.98	30.6	738
					N133	1.91	29.5	682	2.13	32.9	752
9.7	150	FSP	Speer	64.5	N135	2.02	31.2	683	2.24	34.6	748
					N120	1.42	21.9	556	1.57	24.2	605
					N130	1.60	24.7	583	1.78	27.5	641
					N133	1.66	25.6	590	1.85	28.5	645
					N135	1.90	29.3	610	2.10	32.4	669
					N140	2.04	31.5	613	2.25	34.7	683

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.30-30 Winchester

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
11.0	170	FSP	Speer	64.5	N130	1.54	23.8	553	1.71	26.4	602
					N133	1.63	25.2	548	1.79	27.6	594
					N135	1.75	27.0	556	1.95	30.1	614
					N140	1.83	28.2	550	2.05	31.6	617

.300 Savage

Test barrel: 600 mm, 1 in 12" twist

Primers: Large Rifle

Cases: Remington, trim-to length 47.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
6.5	100	HP	LAPUA	62.5	N120	2.13	32.9	862	2.45	37.7	985
					N130	2.36	36.5	903	2.59	40.0	996
					N133	2.52	38.9	883	2.85	44.0	983
8.1	125	TNT-HP	Speer	65.5	N120	2.01	31.0	745	2.27	35.1	837
					N130	2.16	33.3	776	2.42	37.4	863
					N133	2.49	38.4	806	2.71	41.8	884
9.7	150	Mega	LAPUA	61.5	N130	1.82	28.1	665	2.18	33.7	750
					N135	2.18	33.7	687	2.50	38.5	771
					N140	2.37	36.5	699	2.72	42.0	792
10.7	165	SBT	Sierra	66.0	N133	2.14	33.0	670	2.42	37.3	756
					N135	2.30	35.5	691	2.53	39.0	761
					N140	2.40	37.0	692	2.68	41.4	784
12.0	185	Mega	LAPUA	66.0	N135	2.08	32.1	611	2.44	37.6	704
					N140	2.23	34.5	631	2.59	40.0	714
					N540	2.28	35.2	623	2.66	41.0	719

.308 Winchester

Test barrel: 610 mm, 1 in 12" twist

Primers: Large Rifle

Cases: LAPUA, trim-to length 51.00 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
3.7	57	ALS*)	LAPUA	67.0	N110	1.45	22.4	911	2.20	33.9	1197
6.5	100	HP	LAPUA	67.0	N120	2.09	32.3	848	2.33	36.0	930
					N130	2.35	36.3	892	2.64	40.7	976
					N135	2.68	41.4	906	3.03	46.8	1002

*) Note: A muzzle velocity exceeding 1000 m/s may lead to severe barrel fouling!

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.308 Winchester

Bullet				Powder	Starting load			Maximum load			
Weight [g]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]		
7.1	110	HP	Sako	67.5	N120	2.35	36.3	853	2.59	38.6	935
					N130	2.59	40.0	881	2.86	44.1	959
					N133	2.80	43.2	895	3.08	47.5	978
8.0	123	FMJ	LAPUA	66.9	N130	2.30	35.5	793	2.66	41.0	891
					N135	2.75	42.4	837	2.98	46.0	900
8.1	125	Ballistic Tip	Nosler	70.0	N130	2.46	38.0	836	2.70	41.7	908
					N133	2.66	41.0	848	2.91	44.9	923
					N135	2.77	42.7	852	3.06	47.2	929
					N140	2.93	45.2	855	3.23	49.8	936
9.7	150	Mega	LAPUA	71.0	N135	2.05	31.7	659	2.53	39.1	779
					N140	2.09	32.2	648	2.65	40.8	781
					N540	2.26	34.9	666	2.76	42.6	797
9.7	150	SPBT	Sierra	70.0	N133	2.45	37.8	770	2.72	42.0	832
					N135	2.62	40.4	780	2.87	44.3	846
					N140	2.74	42.3	776	3.03	46.8	858
					N150	2.86	44.1	785	3.12	48.1	850
9.7	150	Lock Base	LAPUA	71.0	N540	2.78	42.9	780	3.07	47.4	864
9.7	150	HPBT	Sierra	71.0	N140	2.65	40.9	761	2.96	45.7	842
					N540	2.73	42.1	755	3.04	46.9	860
					N150	2.75	42.4	770	3.05	47.1	843
					N550	2.90	44.8	769	3.22	49.7	852
					N135	2.23	34.4	680	2.64	40.7	797
10.0	155	Scenar	LAPUA	71.0	N140	2.38	36.7	679	2.81	43.3	800
					N150	2.53	39.0	712	3.03	46.8	817
					N140	2.66	41.1	761	3.00	46.3	853
10.0	155	Silver Jacket Scenar	LAPUA	71.0	N150	2.71	41.9	773	3.04	46.9	858
					N540	2.70	41.7	775	3.05	47.0	868
					N135	2.40	37.0	734	2.68	41.4	806
10.0	155	HPBT	Sierra	71.0	N140	2.54	39.2	741	2.86	44.1	817
					N540	2.60	40.1	741	2.93	45.2	829
					N150	2.76	42.6	773	3.02	46.6	841
					N550	2.90	44.8	784	3.23	49.8	871
					N135	2.54	39.2	737	2.79	43.1	813
10.1	156	SPBT	Sako	68.2	N140	2.67	41.2	736	2.94	45.4	821
					N150	2.83	43.7	765	3.13	48.3	845
					N133	2.41	37.2	722	2.64	40.7	787
10.7	165	SPBT	Speer	71.0	N135	2.51	38.7	732	2.77	42.7	801
					N140	2.63	40.6	737	2.91	44.9	813
					N150	2.69	41.5	743	3.00	46.3	817
					N550	2.87	44.3	754	3.12	48.1	821
					N140	2.59	40.0	719	2.85	44.0	794
10.9	167	Scenar	LAPUA	71.0	N540	2.58	39.8	726	2.85	44.0	804

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.308 Winchester

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Type	Mfg.	C.O.L. [mm]	Type	Weight		Velocity	Weight		Velocity	
					[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
10.9	167	Scenar	LAPUA	71.0	N150	2.71	41.8	740	2.98	46.0	810
					N550	2.88	44.4	756	3.17	48.9	829
10.9	167	Silver Jacket Scenar	LAPUA	71.0	N140	2.65	40.9	754	2.89	44.7	826
					N150	2.69	41.5	749	2.97	45.8	826
10.9	168	HPBT	Sierra	71.0	N540	2.68	41.4	746	3.00	46.3	835
					N140	2.48	38.3	704	2.78	42.9	779
					N540	2.58	39.8	717	2.89	44.6	800
					N150	2.62	40.4	727	2.88	44.4	794
11.0	170	FMJBT	LAPUA	71.0	N550	2.81	43.4	749	3.07	47.4	823
					N135	2.45	37.8	717	2.70	41.7	784
					N140	2.59	40.0	723	2.86	44.1	797
					N540	2.63	40.6	714	2.91	44.9	810
11.3	175	HPBT	Sierra	71.0	N150	2.68	41.4	737	2.97	45.8	807
					N550	2.81	43.4	732	3.14	48.5	845
					N140*	2.41	37.2	684	2.68	41.4	753
					N540*	2.55	39.4	708	2.79	43.1	779
11.7	180	SP	Hornady	71.0	N150*	2.52	38.9	704	2.83	43.7	776
					N550*	2.69	41.5	720	2.97	45.8	793
					N135	2.36	36.4	669	2.62	40.4	741
					N140	2.50	39.6	678	2.77	42.7	755
11.7	180	X	Barnes	71.0	N150	2.62	40.4	708	2.88	44.4	766
					N540	2.23	34.4	629	2.55	39.4	715
					N550	2.44	37.7	657	2.75	42.4	734
12.0	185	FMJBT	LAPUA	71.0	N135	2.33	36.0	667	2.58	39.8	739
					N140	2.47	38.1	683	2.74	42.3	754
					N540	2.56	39.5	706	2.77	2.77	765
12.0	185	Scenar	LAPUA	71.0	N150	2.54	39.2	690	2.82	43.5	750
					N550	2.74	42.3	702	3.01	46.5	773
12.0	185	Silver Jacket Scenar	LAPUA	71.0	N140	2.51	38.8	700	2.77	42.8	774
					N150	2.53	39.1	707	2.85	44.0	780
					N550	2.77	42.8	702	3.06	47.2	809
12.0	185	Forex	LAPUA	69.5	N540	2.33	36.0	632	2.72	42.0	734
					N150	2.30	35.6	629	2.81	43.3	742
					N550	2.53	39.0	643	2.98	46.0	762
12.3	190	HPBT	Sierra	71.0	N140	2.43	37.5	670	2.69	41.5	736
					N540	2.45	37.8	667	2.75	42.4	752
					N150	2.50	38.6	669	2.76	42.6	738
					N550	2.65	40.9	690	2.96	45.7	767
13.0	200	SP	Speer	71.0	N140	2.34	36.1	625	2.58	39.8	688
					N150	2.39	36.9	638	2.62	40.4	689

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

7.62 x 53R (7.62 Russian)

Test barrel: 660 mm, 1 in 10" twist

Primers: Large Rifle

Cases: LAPUA, trim-to length 53.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.		C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]
8.0	123	FMJ	LAPUA	68.5	N130	2.72	42.0	863	3.03	46.8	932
					N133	2.99	46.1	882	3.27	50.5	946
					N135	3.04	46.9	862	3.37	52.0	950
9.7	150	Mega	LAPUA	70.9	N133	2.10	32.3	643	2.78	43.0	813
					N135	2.46	37.9	696	3.01	46.4	839
					N140	2.63	40.6	710	3.15	48.5	851
10.0	155	Scenar	LAPUA	75.5	N135	2.54	39.2	726	2.99	46.2	852
					N140	2.73	42.2	747	3.16	48.7	870
					N150	2.88	44.5	770	3.28	50.6	872
10.1	156	SPBT	Sako	70.5	N135	2.76	42.6	753	3.06	47.2	834
					N140	2.87	44.3	757	3.19	49.2	845
					N150	3.02	46.6	771	3.33	51.4	857
10.9	167	Scenar	LAPUA	75.0	N540	2.74	42.3	711	3.12	48.1	812
					N140	2.88	44.4	752	3.18	49.1	830
					N150	2.97	45.8	745	3.27	50.5	834
					N550	3.99	46.2	729	3.40	52.5	840
10.9	168	HPBT	Sierra	75.5	N140	2.75	42.5	715	3.12	48.2	804
					N540	2.83	43.6	722	3.22	49.7	826
					N150	2.90	44.8	730	3.24	50.0	823
					N550	3.07	47.4	741	3.45	53.3	845
12.0	185	Scenar	LAPUA	75.0	N135	2.59	40.0	686	2.88	44.4	767
					N540	2.65	40.9	679	3.01	46.4	772
					N140	2.71	41.8	698	3.03	46.8	783
					N150	2.82	43.5	699	3.13	48.3	785
12.0	185	Mega	LAPUA	70.0	N550	2.86	44.2	693	3.27	50.5	802
					N140	2.59	39.9	646	2.99	46.1	745
					N540	2.68	41.4	658	3.06	47.2	757
					N150	2.74	42.3	658	3.08	47.6	752
12.0	185	Forex	LAPUA	71.5	N550	2.93	45.2	678	3.32	51.3	789
					N140	2.48	38.3	675	2.93	45.3	783
					N540	2.68	41.3	698	3.04	46.8	800
					N150	2.67	41.3	703	3.09	47.7	793
12.0	185	HPBT	Sierra	77.0	N140	2.50	38.6	635	2.93	45.2	736
					N540	2.54	39.2	642	2.93	45.2	738
					N150	2.62	40.4	646	3.01	46.4	740
					N550	2.84	43.8	667	3.19	49.2	762
13.0	200	D166 FMJBT	Lapua	76.0	N140	2.37	36.6	641	2.60	40.1	694
					N150	2.43	37.5	656	2.62	40.4	709
					N540	2.48	38.3	663	2.63	40.6	711
14.3	220	HPBT	Sierra	77.0	N540	2.46	37.9	600	2.77	42.8	685
					N150	2.40	37.0	573	2.81	43.3	677
					N550	2.66	41.0	613	3.02	46.6	710

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

7.5 x 55 Swiss GP31

Test barrel: 600 mm, 1 in 10" twist
 Primers: Large Rifle
 Cases: Norma, trim-to length 55.40 mm

Bullet				Powder	Starting load			Maximum load				
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity	
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
10.0	155	Scenar	LAPUA	75.5	N140	3.15	48.6	808	3.23	49.8	838	
						N150	3.18	49.1	811	3.30	50.9	844
						N540	3.20	49.4	829	3.31	51.1	877
10.9	167	Scenar	LAPUA	75.5	N140	2.95	45.5	755	3.13	48.3	817	
						N150	3.05	47.1	772	3.19	49.2	836
						N540	3.01	46.5	888	3.16	48.8	838
12.0	185	Scenar	LAPUA	75.5	N140	2.70	41.7	724	3.01	46.5	755	
						N150	2.92	45.1	726	3.03	46.8	757
						N540	2.86	44.1	729	3.05	47.1	764

.30-06 Springfield

Test barrel: 620 mm, 1 in 10" twist
 Primers: Large Rifle
 Cases: LAPUA, trim-to length 63.10 mm

Bullet				Powder	Starting load			Maximum load					
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity		
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]		
3.7	57	ALS*)	LAPUA	79.0	N110	1.72	26.5	948	2.45	37.8	1201		
6.5	100	HP	Lapua	79.8	N130	2.58	39.8	869	3.15	48.6	998		
						N133	3.07	47.4	911	3.49	53.9	1016	
						N135	3.25	50.2	927	3.66	56.5	1033	
						N140	3.50	54.0	926	3.96	61.1	1044	
						N540	3.59	55.4	939	4.08	63.0	1058	
6.8	105	HP	LAPUA	81.0	N133	3.02	46.6	914	3.32	51.2	988		
						N135	3.23	49.8	928	3.57	55.1	1010	
						N140	3.46	53.4	932	3.83	59.1	1025	
7.1	110	RN	Hornady	74.0	N133	3.15	48.6	873	3.48	53.7	983		
						N135	3.14	48.5	864	3.47	53.5	964	
						N140	3.38	52.2	881	3.74	57.7	977	
8.0	123	FMJ	Lapua	79.8	N150	3.57	55.1	905	3.94	60.8	1002		
						N133	2.95	45.5	825	3.31	51.1	922	
							N135	3.19	49.2	852	3.48	53.7	937
							N140	3.35	51.7	853	3.73	57.6	952
						N540	3.49	53.9	863	3.83	59.1	958	
8.1	125	Ballistic Tip	Nosler	84.0	N150	3.59	55.4	880	3.91	60.3	976		
						N135	3.10	47.8	865	3.40	52.5	935	
							N140	3.31	51.1	878	3.64	56.2	958
							N540	3.49	53.9	880	3.91	60.3	994
						N150	3.44	53.1	882	3.81	58.8	966	
N550	3.70	57.1	895	3.91	60.3	950							

*) Note: A muzzle velocity exceeding 1000 m/s may lead to severe barrel fouling!

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.30-06 Springfield

Test barrel: 620 mm, 1 in 10" twist
 Primers: Large Rifle
 Cases: LAPUA, trim-to length 63.10 mm

Bullet					Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity	
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
9.7	150	Mega	LAPUA	76.9	N135	2.60	40.1	711	3.09	47.7	835	
						N140	2.83	43.7	732	3.32	51.2	857
						N540	2.94	45.3	742	3.47	53.5	893
9.7	150	Lock Base	LAPUA	84.0	N135	2.93	45.2	789	3.23	49.8	851	
						N140	3.13	48.3	802	3.45	53.2	872
						N540	3.16	48.8	792	3.54	54.6	882
						N150	3.25	50.2	803	3.58	55.2	877
						N550	3.51	54.2	819	3.87	59.7	917
						N140	3.08	47.5	798	3.42	52.8	871
9.7	150	HPBT	Sierra	84.0	N540	3.27	50.5	809	3.64	56.2	906	
						N150	3.29	50.8	807	3.65	56.3	895
						N550	3.54	54.6	833	3.87	59.7	916
						N140	2.78	42.9	755	3.23	49.8	850
10.0	155	Scenar	LAPUA	84.0	N150	2.79	43.0	767	3.30	50.9	863	
						N540	3.05	47.0	774	3.45	53.2	886
						N135	2.97	45.8	776	3.29	50.8	851
10.1	156	SPBT	Sako	80.5	N140	3.10	47.8	775	3.42	52.8	859	
						N150	3.18	49.1	781	3.53	54.5	863
						N140	2.95	45.5	737	3.25	50.2	812
10.9	167	Scenar	LAPUA	84.0	N540	2.94	45.4	737	3.37	52.0	836	
						N150	3.06	47.2	748	3.38	52.2	821
						N550	3.22	49.7	779	3.57	55.1	855
						N160	3.60	55.6	749	4.00	61.7	842
						N140	2.91	44.9	717	3.24	50.0	799
						N540	2.96	45.7	729	3.34	51.5	821
11.0	170	FMJBT	LAPUA	84.0	N150	3.06	47.2	735	3.41	52.6	815	
						N550	3.17	48.9	746	3.61	55.7	842
						N160	3.65	56.3	765	4.05	62.5	853
						N160	3.39	52.3	730	3.73	57.6	793
11.7	180	Spitzer	Speer	84.0	N160	3.39	52.3	730	3.73	57.6	793	
11.7	180	X	Barnes	84.0	N550	3.15	48.6	704	3.53	54.5	791	
12.0	185	Scenar	LAPUA	84.0	N540	2.86	44.1	688	3.16	48.8	771	
						N150	2.88	44.4	696	3.26	50.3	778
						N550	3.02	46.6	701	3.36	51.9	792
						N160	3.48	53.7	724	3.85	59.4	809
						N560	3.52	54.3	724	4.01	61.9	816
						N150	2.74	42.2	681	3.12	48.1	781
12.0	185	Forex	LAPUA	81.0	N550	3.02	46.7	707	3.31	51.1	822	
						N160	3.22	49.7	736	3.49	53.8	811

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.30-06 Springfield

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
12.3	190	HPBT	Sierra	84.0	N150	2.90	44.8	695	3.20	49.3	767
					N550	3.07	47.4	708	3.49	53.8	812
					N160	3.42	52.7	724	3.81	58.8	795
					N560	3.57	55.1	721	4.04	62.4	825
13.0	200	Partition	Nosler	84.0	N150	2.79	43.0	669	3.08	47.5	724
					N160	3.38	52.1	704	3.73	57.6	765
14.3	220	RN	Hornady	84.0	N160	3.29	50.7	654	3.63	56.0	722
					N560	3.47	53.5	672	3.97	61.3	767

.300 H&H Magnum

Test barrel: 610 mm, 1 in 10" twist

Primers: Large Rifle Magnum

Cases: Winchester, trim-to length 72.20 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
8.1	125	FMJ	Sako	88.5	N160				5.00	77.2	1100
9.7	150	Spitzer	Speer	91.0	N160				4.87	75.2	950
10.0	155	SP	Sako	91.0	N160				4.69	72.4	915
10.7	165	Spitzer	Speer	91.2	N160				4.55	70.2	885
11.7	180	SP	Sako	91.2	N160				4.40	67.9	875
14.3	220	RN	Hornady	90.9	N160				4.22	65.1	775

.300 Winchester Magnum

Test barrel: 620 mm, 1 in 10" twist

Primers: Large Rifle Magnum

Cases: LAPUA, trim-to length 66.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
7.1	110	SP	Hornady	83.0	N160	4.96	76.5	959	5.40	83.3	1063
8.5	130	HP	LAPUA	84.2	N160	4.61	71.1	881	5.14	79.3	997
8.5	150	Ballistic Tip	Nosler	84.8	N160	4.47	69.0	850	4.95	76.4	944
					N165	4.88	75.3	883	5.39	83.2	974
10.0	155	Scenar	LAPUA	84.5	N160	4.13	63.7	833	4.66	71.8	958
					N560	4.48	69.1	849	5.00	77.2	969
					N165	4.69	72.4	864	5.31	81.9	992
10.9	167	Scenar	LAPUA	84.8	N160	4.47	69.0	830	4.83	74.5	910
					N165	4.76	73.5	839	5.18	79.9	924

NOTE!

WHEN ONLY THE MAXIMUM LOADS ARE SHOWN IN THE TABLES ABOVE START LOADING WITH APPROXIMATELY 15 % SMALLER POWDER CHARGE.

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.300 Winchester Magnum

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
11.7	180	Partition	Nosler	84.8	N160	4.23	65.3	791	4.70	72.5	874
					N165	4.58	70.7	800	5.03	77.6	883
12.0	185	Forex	LAPUA	84.0	N560	4.13	63.7	776	4.71	72.7	892
					N165	4.15	64.0	771	4.91	75.8	902
12.3	190	HPBT	Sierra	84.8	N170	4.50	69.5	761	5.22	80.6	877
					N560	4.30	66.4	818	4.84	74.7	893
					N165	4.45	68.7	811	4.97	76.7	877
					N170	4.35	67.1	783	5.01	77.3	856
13.0	200	HPBT	Sierra	84.8	N160	3.98	61.4	755	4.52	69.8	830
					N560	3.90	60.2	764	4.55	70.2	846
					N165	4.10	63.3	762	4.74	73.1	840
					N170	3.99	61.6	737	4.79	73.9	822
14.3	220	HPBT	Sierra	84.8	N560	3.35	51.7	688	4.07	62.8	776
					N165	3.20	49.4	659	4.17	64.4	764
					N170	3.60	55.6	682	4.26	65.7	761

.300 Weatherby Magnum

Test barrel: 660 mm, 1 in 10" twist

Primers: Large Rifle Magnum

Cases: Weatherby, trim-to length 71.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
8.1	125	Ballistic Tip	Nosler	90.0	N160	5.20	80.2	969	5.75	88.7	1101
9.7	150	Ballistic Tip	Nosler	90.1	N160	4.90	75.6	895	5.42	83.6	1000
					N165	5.31	81.9	904	5.89	90.9	1006
10.7	165	SPBT	Speer	90.3	N160	4.85	74.8	859	5.37	82.9	973
					N165	5.24	80.9	860	5.80	89.5	980
11.7	180	SP	Hornady	90.3	N160	4.71	72.7	834	5.19	80.1	926
					N165	5.09	78.5	840	5.62	86.7	939
13.0	200	HPBT	Sierra	90.3	N560	4.70	72.5	821	5.17	79.8	903
					N165	4.58	70.7	795	5.24	80.9	888
					N170	4.59	70.8	781	5.51	85.0	890

NOTE: LOADS LESS THAN ABOVE LISTED STARTING LOADS MAY GENERATE EXCESSIVE CHAMBER PRESSURE AND MUST NOT BE USED!

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.300 LAPUA Magnum

Test barrel: 690 mm, 1 in 9 1/2" twist
 Primers: Large Rifle Magnum
 Cases: LAPUA, trim-to length 68.95 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
10.0	155	Scenar	LAPUA	93.0	N160	4.89	75.4	970	5.29	81.6	1025
					N560	5.24	80.9	970	5.81	89.7	1068
					N170	6.01	92.7	990	6.48	100.0	1073
11.0	170	Lock Base	LAPUA	93.0	N560	5.12	78.9	938	5.55	85.7	1010
					N170	5.40	83.3	889	5.97	92.1	970
					24N41	6.15	94.8	941	6.63	102.3	1024
12.0	185	Scenar	LAPUA	93.0	N560	4.82	74.4	875	5.39	93.2	964
					N170	5.40	83.3	889	5.97	92.1	971
					24N41	5.93	91.6	912	6.36	91.6	980
13.0	200	HPBT	Sierra	93.0	N170	5.09	78.6	847	5.64	87.0	916
					24N41	5.56	85.8	862	6.09	93.9	934
					20N29	6.40	98.7	888	6.80	104.9	955
14.3	220	Sierra	HPBT	93.0	24N41	5.10	78.6	799	5.76	88.8	882
					20N29	6.06	93.5	851	6.52	100.6	912

.300 Remington Ultra Magnum

Test barrel: 655 mm, 1 in 11" twist
 Primers: Large Rifle Magnum
 Cases: Remington, trim-to length 71.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
10.7	165	Partition	Nosler	89.5	N160	5.20	80.2	919	5.37	82.9	951
					N560	5.45	84.1	917	5.80	89.5	976
					N165	5.67	87.5	930	5.89	90.9	973
11.7	180	"X"	Barnes	89.5	N560	4.82	74.4	887	5.23	80.7	920
					N165	4.69	72.4	858	5.02	77.5	901
					N170	5.22	80.6	871	5.69	87.8	914
12.0	185	Scenar	LAPUA	91.4	N560	5.53	85.3	912	5.73	88.4	908
					N165	5.35	82.6	900	5.76	88.9	918
					N170	6.00	92.6	898	6.25	96.5	932

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
 LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.30-.378 Weatherby Magnum

Test barrel: 660 mm, 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Weatherby, trim-to length 71.75 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
10.0	155	Scenar	LAPUA	93.0	N160	6.10	94.1	1001	6.41	99.0	1052
					N165	6.68	103.1	1014	6.94	107.1	1072
					N170	7.23	111.6	1005	7.54	116.4	1066
11.0	170	Lock Base	LAPUA	93.0	N165	6.33	97.7	953	6.67	102.9	999
					N170	6.94	111.1	953	7.20	111.1	1005
					24N41	7.31	112.8	977	7.83	120.9	1057
12.0	185	Scenar	LAPUA	93.0	N170	6.69	103.3	942	7.12	109.8	999
					24N41	7.16	110.5	955	7.58	117.0	1020
					20N29	7.94	122.5	968	8.18	126.2	1000
13.0	200	HPBT	Sierra	93.0	24N41	6.90	106.5	939	7.20	111.1	973
					20N29	7.52	116.0	914	7.88	121.6	976
14.3	220	Sierra	HPBT	93.0	20N29	7.14	110.1	869	7.64	117.9	933

NOTE: LOADS LESS THAN ABOVE LISTED STARTING LOADS MAY GENERATE EXCESSIVE CHAMBER PRESSURE AND MUST NOT BE USED!

7.62 x 39

Test barrel: 415 mm, 1 in 9 1/2" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 38.50 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
3.7	57	FMJ	LAPUA	55.7	N110	1.31	20.2	855	1.60	24.7	952
8.0	123	FMJ	Sako	55.7	N120				1.72	26.5	740
8.0	123	SP	Sako	54.2	N120				1.73	26.7	720
8.0	123	Mega	LAPUA	52.4	N120	1.42	22.0	602	1.66	25.7	703
					N130	1.58	24.4	634	1.77	27.3	719

.303 British

Test barrel: 610 mm, 1 in 10" twist
Primers: Large Rifle
Cases: Remington, trim-to length 56.20 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
11.7	180	SP	Sako	73.6	N140				2.70	41.7	775

NOTE!

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8 x 72R

Test barrel: 610 mm, 1 in 9¹/₂" twist
 Primers: Large Rifle
 Cases: Necked-down RWS 9.3 x 72R,
 trim-to length 71.80 mm

Bullet				Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[g]	[grs]	[m/s]
12.7	196	SP	RWS*)	90.4	N140			2.68	41.4	700

*) Note: Max. bullet diameter 8.09 mm (.318").

8mm Mauser (8 x 57 JS)

Test barrel: 620 mm, 1 in 9¹/₂" twist
 Primers: Large Rifle
 Cases: LAPUA, trim-to length 56.80 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Weight		Velocity	
[g]	[grs]			[mm]		[g]	[grs]	[g]	[grs]	[m/s]	
8.1	125	SP	Hornady	74.0	N130	2.80	43.2	874	3.12	48.1	950
					N133	3.14	48.5	883	3.50	54.0	979
					N135	3.22	49.7	882	3.57	55.1	974
9.7	150	Spitzer	Speer	76.0	N135	2.97	45.8	801	3.31	51.1	880
					N140	3.13	48.3	799	3.49	53.9	892
11.0	170	SP	Speer	77.0	N135	2.86	44.1	748	3.18	49.1	829
					N140	2.99	46.1	747	3.33	51.4	838
					N150	3.13	48.3	761	3.48	53.7	853
13.0	200	Spitzer	Speer	79.5	N140	2.77	42.7	661	3.08	47.5	759
					N150	2.86	44.1	680	3.19	49.2	763
13.0	200	Partition	Nosler	81.0	N160	3.27	50.5	681	3.64	56.2	785

8 x 57 JRS

Test barrel: 610 mm, 1 in 9¹/₂" twist
 Primers: Large Rifle
 Cases: RWS, trim-to length 56.80

Bullet				Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[g]	[grs]	[m/s]
9.7	150	Spitzer	Speer	72.5	N140			3.46	53.4	870
11.0	170	SP	RWS	73.5	N140			3.18	49.1	810
11.7	180	KS	RWS	73.5	N140			3.28	50.6	800
12.1	187	HMK	RWS	77.2	N140			3.15	48.6	795

NOTE!

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8 x 68 S

Test barrel: 650 mm, 1 in 11" twist
Primers: Large Rifle Magnum
Cases: RWS, trim-to length 67.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity		Weight	Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
12.1	187	SG	RWS	86.0	N160				5.05	77.9	935
12.7	196	TMR	RWS	86.4	N160				5.00	77.2	925
13.0	200	Spitzer	Speer	86.5	N160				4.68	72.2	880

.338 Winchester Magnum

Test barrel: 620 mm, 1 in 10" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 63.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity		Weight	Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
13.0	200	SP	Homady	85.0*	N160	4.71	72.7	802	5.23	80.7	905
14.6	225	SP	Homady	84.0	N160	4.50	69.4	765	5.02	77.5	848
					N560	4.41	68.0	746	4.98	76.8	843
16.2	250	Scenar	LAPUA	84.0	N550	3.86	59.6	714	4.25	65.5	800
					N160	3.92	60.5	701	4.52	69.8	803
					N560	4.42	68.1	725	5.00	77.2	833
16.2	250	SBT	Sierra	84.8	N160	3.95	60.9	701	4.42	68.2	775
					N560	3.99	61.6	701	4.57	70.5	792
					N165	4.25	65.6	710	4.83	74.5	796
16.2	250	Grand Slam	Speer	83.8	N160	4.18	64.5	701	4.66	71.9	781
					N165	4.50	69.4	718	5.00	77.2	794
16.8	250	Forex	LAPUA	85.1*	N160	3.88	59.9	689	4.63	71.4	803
					N560	4.40	67.9	715	5.06	78.1	724
					N165	4.63	71.4	731	5.39	83.2	848
17.8	275	SP	Speer	85.0*	N165	4.35	67.1	690	4.82	74.4	758
19.4	300	HPBT	Sierra	84.8	N160	3.73	57.6	633	4.24	65.4	707
					N560	3.84	59.3	642	4.41	68.0	718

*) The CIP maximum cartridge overall length is exceeded.

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.338 LAPUA Magnum

Test barrel: 700 mm, 1 in 10" twist
 Primers: Large Rifle Magnum
 Cases: LAPUA, trim-to length 69.00 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
13.0	200	SP	Hornady	91.0	N160	5.51	85.0	878	6.13	94.6	979
					N165	5.94	91.7	885	6.57	101.4	990
14.6	225	SP	Hornady	91.0	N160	5.34	82.4	839	5.95	91.8	923
					N560	5.28	81.5	855	6.01	92.7	954
16.2	250	Scenar	LAPUA	93.5	N165	5.71	88.1	839	6.28	96.9	933
					N170	5.67	87.5	837	6.49	100.2	937
					N560	4.61	71.1	766	5.51	85.0	881
					N165	4.68	72.3	757	5.57	85.9	858
16.2	250	Lock Base	LAPUA	91.5	N170	5.52	85.1	792	6.29	97.1	887
					N560	4.98	76.9	802	5.71	88.1	898
					N165	4.75	73.3	769	5.79	89.4	877
16.8	270	Forex	LAPUA	91.0	N170	5.09	78.5	775	6.10	94.1	879
					N560	4.84	74.7	772	5.59	86.2	886
					N165	4.83	74.6	771	5.57	85.9	883
					N170	5.48	84.8	793	6.25	96.4	896
19.4	300	HPBT	Sierra	91.5	N165	4.29	66.2	663	5.37	82.8	785
					N560	4.39	67.8	687	5.55	85.6	820
					N170	4.82	74.4	686	6.05	93.3	812
					24N41	5.18	79.9	702	6.33	97.7	814

9.3 x 57

Test barrel: 610 mm, 1 in 14" twist
 Primers: Large Rifle
 Cases: Norma, trim-to length 56.60 mm

Bullet					Powder	Starting load			Maximum load		
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
16.5	255	SP	Sako	74.3	N140				3.30	50.9	690

NOTE: This cartridge is not supported by CIP or by SAAMI. The maximum load does not exceed 280 MPa.

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9.3 x 62

Test barrel: 610 mm, 1 in14" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 61.80 mm

Bullet					Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
16.7	258	HMK	RWS	81.7	N135				3.73	57.6	765
17.5	270	Forex	LAPUA	80.6	N135	2.94	45.4	589	3.52	54.3	700
					N140	2.98	46.0	617	3.61	55.7	710
					N150	3.40	52.5	639	3.91	60.4	728
18.5	285	TMR	RWS	82.1	N135				3.53	54.5	710
18.5	285	Mega	LAPUA	83.4	N135	3.01	46.5	600	3.50	54.0	700
					N140	3.30	50.9	600	3.69	56.9	675

9.3 x 64 Brenneke

Test barrel: 650 mm, 1 in 14" twist
Primers: Large Rifle
Cases: RWS, trim-to length 63.80 mm

Bullet					Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
16.7	258	HMK	RWS	85.5	N140				4.40	67.9	815
18.5	285	TMR	RWS	84.5	N140				4.34	67.0	770
19.0	293	TUG	RWS	85.5	N160				4.92	75.9	777

9.3 x 74R

Test barrel: 610 mm, 1 in 14" twist
Primers: Large Rifle
Cases: RWS, trim-to length 74.50 mm

Bullet					Powder	Starting load			Maximum load		
Weight		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
15.0	231	SP	Norma	92.1	N140	3.72	57.4	718	4.10	63.3	779
16.5	256	SP	Sako	92.2	N140	3.50	54.0	654	3.86	59.6	723
17.5	270	Forex	LAPUA	91.5	N135	3.24	50.0	627	3.76	58.0	702
					N140	2.23	49.9	631	3.52	54.4	699
18.5	285	Mega	LAPUA	92.2	N140	3.22	49.7	614	3.57	55.1	669
18.5	285	X	Barnes	97.6*	N140	3.11	48.0	614	3.42	52.8	660
19.0	293	TUG	RWS	95.5*	N140	3.24	50.0	603	3.59	55.4	670

*) The CIP maximum cartridge overall length is exceeded.

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.375 H&H Magnum

Test barrel: 620 mm, 1 in 12" twist
 Primers: Large Rifle Magnum
 Cases: Remington, trim-to length 72.20 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
15.2	235	Spitzer	Speer	91.0	N140				4.95	76.4	880
					N160				5.62	86.7	885
17.5	270	RN	Hornady	91.5*	N140				4.75	73.3	840
					N160				5.45	84.1	850
19.4	300	RN	Hornady	90.5	N140				4.51	69.6	770
					N160				5.30	81.8	780

*) The CIP maximum cartridge overall length is exceeded.

.444 Marlin

Test barrel: 560 mm, 1 in 38" twist
 Primers: Large Rifle
 Cases: Remington, trim-to length 56.30 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
13.0	200	HP/XTP	Hornady	64.4	N110	2.66	41.0	720	2.92	45.1	771
					N120	3.25	50.2	777	3.59	55.4	840
15.6	240	JTC-SIL	Hornady	64.5	N120	2.94	45.4	689	3.26	50.3	748
					N130	3.28	50.6	706	3.53	54.5	752
17.2	265	FP	Hornady	65.0	N120	2.82	43.5	649	3.12	48.1	707
					N130	3.03	46.2	645	3.33	51.4	707

.45-70 Government

Test barrel: 560 mm, 1 in 20" twist
 Primers: Large Rifle
 Cases: Remington, trim-to length 53.30 mm

WARNING: These loads are to be used only in modern rifles like Ruger #1 or .45-70's chambered on Mauser type bolt actions. They must NOT be used in old rifles with weaker actions like Trapdoor and old Marlin mod. 1895. The listed maximum loads do not exceed 195 MPa.

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
19.4	300	HP	Hornady	64.5	N120	2.63	40.6	568	2.92	45.1	618
					N130	3.16	48.8	594	3.38	52.2	637
					N133	3.81	58.8	624	4.10	63.3	683
19.4	300	HP	Sierra	64.1	N120	2.52	38.9	558	3.01	46.5	624
					N133	3.74	57.7	627	3.89	60.0	667
					N135	3.80	58.6	604	4.00	61.7	650
25.9	400	SP	Speer	64.7	N120	2.06	31.8	444	2.32	35.8	489
					N133	3.02	46.6	517	3.33	51.4	565
					N135	3.02	46.6	490	3.34	51.5	543

NOTE!

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.458 Winchester Magnum

Test barrel: 635, 1 in 14" twist
Primers: Large Rifle
Cases: Remington, trim-to length 63.30

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
19.4	300	HP	Sierra	74.5	N120	4.19	64.7	740	4.54	70.1	792
22.7	350	SP	Speer	78.5	N120	4.12	63.3	697	4.48	69.1	751
					N130	4.47	69.0	723	4.78	73.8	767
32.4	500	RN	Hornady	84.5	N135	4.24	65.4	588	4.56	70.4	628
32.4	500	AGS	Speer	84.5	N135	4.38	67.6	585	4.70	72.5	626
32.4	500	RN	Hornady	84.5	N140	4.54	70.1	604	4.83	74.5	640

.50 BMG

Test barrel: 1140 mm, 1 in 16½" twist
Primers: CCI 35
Cases: TZZ, trim-to length 99.00 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g] [grs]		Type	Mfg.	C.O.L. [mm]	Type	Weight [g] [grs]		Velocity [m/s]	Weight [g] [grs]		Velocity [m/s]
41.9	647	FMJBT	Speer	137.5	N170	12.80	197.5	789	14.30	220.6	869
					24N41	13.74	212.1	810	14.49	223.6	870
					20N29	15.39	237.5	825	16.32	251.9	899
45.4	700	Solid		137.5	24N41	13.51	208.5	798	14.65	226.0	866
					20N29	15.09	232.9	807	16.25	250.7	884
48.6	750	A-MAX	Hornady	137.5	N170	12.09	186.6	748	13.54	209.0	820
					24N41	12.82	197.9	754	13.82	213.2	822
					20N29	14.41	222.2	768	15.60	240.7	840
48.6	750	Solid		137.5	24N41	13.09	202.0	756	14.20	218.7	834
					20N29	14.43	222.7	770	15.81	244.1	847
51.8	800	Solid		137.5	24N41	11.65	179.7	713	12.56	193.8	772
					20N29	13.97	215.6	770	15.43	238.0	831
55.1	850	Solid		137.5	24N41	12.19	188.8	707	13.19	203.6	766
					20N29	13.71	211.6	735	15.02	231.8	806

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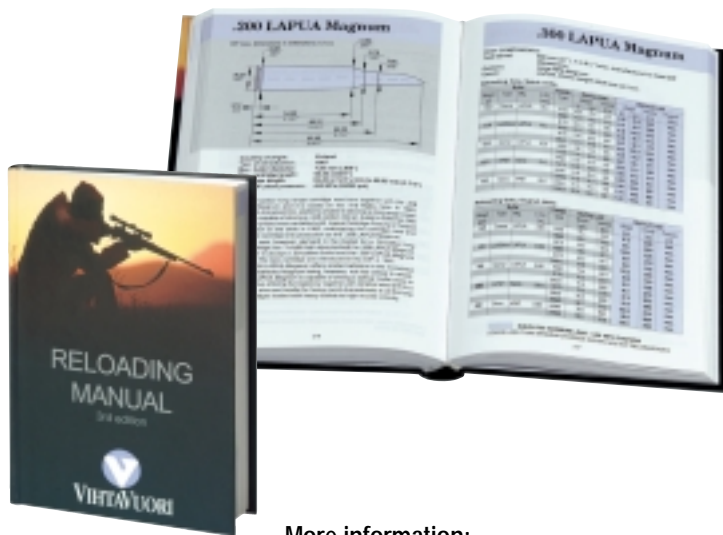
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Vihtavuori Reloading Manual ,
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