

# 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	Solo 1000	231
	N320					700X PB SR7625	Bullseye RedDot Green Dot	Trap100	No. 2	452
	N330		P804 P803					Unique Clays Universal	No. 5	473
	N340			Ba9	PCL501			HS-6		540
	3N37					SR4756	Herco			
	N350									
	3N38							Blue Dot		571
	N105							Hercules 2400	HS-7	No.7
										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	1680 2015
	N130	201	R902	Tubal2 Tubal3	PCL508 PCL507	IMR3031	Reloader 11			2230 2460
	N133	202						H322 BL-(C)2 H335		748
			R903			IMR4064 IMR4895	Reloader 12	H4895		2520
	N135			Tubal4		IMR4320		Varget		
N140		R907	Tubal5 Tubal6	PCL511		Reloader15	H380 H414	2700	760	
N540							H4350	4350		
N150		R904	Tubal7		IMR4350	Reloader 19				
N550										
N160	204				IMR4831		H450		785	
N560		R905	Tubal8				H4831	3100		
N165	MRP						Reloader 22	H1000		
					IMR7828		H870	8700		
N170										

# Table of Contents

BURNING RATE CHART .....	2	6mm Remington .....	18	.458 Winchester Magnum .....	44
TABLE OF CONTENTS .....	3	.240 Weatherby Magnum .....	19	.50 BMG .....	44
PREFACE .....	4	.25-06 Remington .....	19	HANDGUN RELOADING	
VIHTAVUORIPOWDERS.....	5	.260 Remington .....	20	DATA .....	
Rifle Powders .....	5	6.5 x 55 SE .....	20-22	Disclaimer .....	45
N100 series .....	5	6.5 - .284 Norma .....	22-23	7mm TCU .....	45
N500 series .....	5	6.5 x 57 .....	23	7mm BR Remington .....	46
Powders for .50 BMG .....	5	6.5 x 57R .....	23	7mm GJW .....	46
Handgun Powders .....	6	6.5 x 68 .....	24	.30 Luger .....	47
ABOUT THE DATA .....	6	.264 Winchester Magnum .....	24	.32 S.&W. Long N.P. ....	47
Disclaimer .....	6	.270 Winchester .....	24	.32 S.&W. Long Wadcutter...	47
How To Use The Data .....	6	.270 Weatherby Magnum .....	25	.380 ACP .....	47
Pressure .....	7	7mm - 08 Remington .....	25	9mm Luger .....	48-49
PROPERTIES AND STORAGE		7 x 57 .....	26	9 x 21 .....	49-50
OF SMOKELESS POWDER ...	7	7 x 57R .....	26	.357 SIG .....	50
Properties of Smokeless		7 x 64 .....	26-27	.38 Super Auto .....	51
Powder .....	8	7mm Remington Magnum ...	27	.38 Super Lapua .....	52
How To Check Smokeless		7mm Weatherby Magnum ...	28	.38 Special .....	52-53
Powder For Deterioration .....	8	.30 Carbine .....	28	.357 Magnum .....	53-54
Considerations For Storage		.30-30 Winchester .....	28-29	.357 Remington Maximum ...	55
Of Smokeless Powder .....	8	.300 Savage .....	29	.40 S.&W. ....	55-56
Recommendations For Storage		.308 Winchester .....	29-31	10mm AUTO .....	54
Of Smokeless Powder .....	8	7.62 x 54R (7.62 Russian) .....	32	.41 Remington Magnum .....	57
RELOADING SAFETY ...	9 - 10	7.5 x 55 Swiss GP31 .....	33	.44 S.&W. Special .....	57
RIFLE RELOADING DATA	11	.30 - 06 Springfield .....	33-35	.44 Remington Magnum .....	58
Disclaimer .....	11	.300 H&H Magnum .....	35	.45 AUTO .....	59
.17 Remington .....	11	.300 Winchester Magnum ...	35-6	.45 Colt .....	59-60
.22 Vierling .....	11	.300 Weatherby Magnum .....	36	.45 Winchester Magnum .....	60
.220 Russian .....	11	.300 LAPUA Magnum .....	37	.454 Casull .....	61
.22 Hornet .....	12	.300 Remington Ultra Mag. ..	37	.50 AE .....	61
.222 Remington .....	12	.30-378 Weatherby Magnum	38	VIHTAVUORI SMOKELESS	
.223 Remington .....	13	7.62 x 39 .....	38	LOADS FOR COWBOY ACTION	
.222 Remington Magnum .....	14	.303 British .....	38	SHOOTING .....	
.22 PPC - USA .....	14	8 x 72R .....	39	.38 Special .....	63
5.6 x 50 Magnum .....	14	8mm Mauser (8 x 57 JS) .....	39	.357 Magnum .....	64
5.6 x 50R Magnum .....	15	8 x 57 JRS .....	39	.44 S.&W. Special .....	64
.22-250 Remington .....	15	8 x 68 S .....	40	.44 Remington Magnum .....	64
.220 Swift .....	16	.338 Winchester Magnum .....	40	.45 Colt .....	64
5.6 x 57 .....	16	.338 LAPUA Magnum .....	41	UNIT CONVERSIONS .....	
5.6 x 52R .....	16	9.3 x 57 .....	41	VIHTAVUORI DISTRIBUTORS	
6 PPC - USA .....	16	9.3 x 62 .....	42	WORLDWIDE .....	
6mm BR Norma .....	17	9.3 x 64 Brenneke .....	42		
.243 Winchester .....	17-18	9.3 x 74R .....	42		
		.375 H&H Magnum .....	43		
		.444 Marlin .....	43		
		.45-70 Government .....	43		

# 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](http://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]		
<b>1.6</b>	<b>25</b>	HP	Remington	54.5	N135		<b>1.48</b>	<b>22.8</b>	<b>1230</b>	

## 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]		
<b>2.6</b>	<b>40</b>	FMJ	Sako	43.3	N110		<b>0.55</b>	<b>8.5</b>	<b>750</b>	

## .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]		
<b>2.8</b>	<b>43</b>	FMJ	Sako	49.0	N120		<b>1.33</b>	<b>20.5</b>	<b>1110</b>	

### 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	<b>40</b>	Spire Point	Speer	43.5	N110	0.50	7.7	700	<b>0.62</b>	<b>9.6</b>	<b>788</b>
2.9	<b>45</b>	Spitzer	Speer	43.5	N110	0.46	7.1	642	<b>0.57</b>	<b>8.8</b>	<b>723</b>
3.2	<b>50</b>	Spitzer	Speer	43.5	N110	0.46	7.1	598	<b>0.54</b>	<b>8.3</b>	<b>672</b>
					N120	0.60	9.3	598	<b>0.69</b>	<b>10.6</b>	<b>682</b>
3.6	<b>55</b>	Spitzer	Speer	43.5	N110	0.40	6.2	551	<b>0.50</b>	<b>7.7</b>	<b>623</b>
					N120	0.57	8.8	561	<b>0.66</b>	<b>10.2</b>	<b>653</b>

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

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

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

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

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

## .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]
<b>3.2</b>	<b>50</b>	SXSP	Hornady	57.5	N120	1.42	21.9	950	<b>1.52</b>	<b>23.5</b>	<b>1024</b>
					N133	1.68	24.7	977	<b>1.77</b>	<b>27.3</b>	<b>1056</b>
<b>3.6</b>	<b>55</b>	SP	Sako	58.0	N120	1.39	21.5	903	<b>1.49</b>	<b>23.0</b>	<b>977</b>
					N133	1.63	25.2	933	<b>1.71</b>	<b>26.4</b>	<b>1008</b>
					N135	1.68	25.9	935	<b>1.80</b>	<b>27.8</b>	<b>1002</b>
<b>3.9</b>	<b>60</b>	HP	Hornady	57.9	N133	1.59	24.5	890	<b>1.68</b>	<b>25.9</b>	<b>964</b>
					N135	1.64	25.3	895	<b>1.75</b>	<b>27.0</b>	<b>952</b>
<b>4.5</b>	<b>69</b>	HPBT	Sierra*	58.0	N133	1.48	22.8	824	<b>1.58</b>	<b>24.4</b>	<b>887</b>
					N135	1.52	23.5	837	<b>1.64</b>	<b>25.3</b>	<b>900</b>

\*) 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]
<b>3.4</b>	<b>52</b>	HPBT	Sierra	51.4	N120	1.42	21.9	966	<b>1.47</b>	<b>22.7</b>	<b>992</b>
					N130	1.41	21.8	922	<b>1.57</b>	<b>24.2</b>	<b>1016</b>
					N133	1.50	23.1	941	<b>1.67</b>	<b>25.8</b>	<b>1032</b>
					N135	1.62	25.0	954	<b>1.80</b>	<b>27.8</b>	<b>1049</b>
<b>3.6</b>	<b>55</b>	Spitzer	Speer	51.8	N130	1.41	21.8	898	<b>1.58</b>	<b>24.4</b>	<b>976</b>
					N133	1.48	22.8	913	<b>1.65</b>	<b>25.5</b>	<b>985</b>
					N135	1.65	25.5	942	<b>1.83</b>	<b>28.2</b>	<b>1047</b>

## 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]
<b>2.9</b>	<b>45</b>	FMJ	Sako	61.0	N135				<b>1.86</b>	<b>28.7</b>	<b>1075</b>
<b>3.2</b>	<b>50</b>	SP	Sako	61.2	N135				<b>1.83</b>	<b>28.2</b>	<b>1035</b>
					N140				<b>1.85</b>	<b>28.5</b>	<b>1160</b>
<b>3.6</b>	<b>55</b>	SP	Sako	61.2	N140				<b>1.81</b>	<b>27.9</b>	<b>1020</b>
<b>4.5</b>	<b>70</b>	SP	Speer	61.3	N140				<b>1.67</b>	<b>25.8</b>	<b>900</b>

### 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

## 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]
<b>3.2</b>	<b>50</b>	FMJ	Sako	61.0	N133				<b>1.73</b>	<b>26.7</b>	<b>1010</b>
<b>3.6</b>	<b>55</b>	SP	Sierra	61.0	N135				<b>1.68</b>	<b>25.9</b>	<b>975</b>
					N140				<b>1.77</b>	<b>27.3</b>	<b>960</b>
<b>3.9</b>	<b>60</b>	SP	Hornady	61.0	N140				<b>1.69</b>	<b>26.1</b>	<b>930</b>
<b>4.1</b>	<b>63</b>	SP	Sierra	61.0	N140				<b>1.68</b>	<b>25.9</b>	<b>900</b>
<b>4.5</b>	<b>70</b>	SP	Speer	61.0	N140				<b>1.59</b>	<b>24.5</b>	<b>860</b>

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

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

### NOTE!

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

**LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED**

**LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED**

## .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]
<b>3.2</b>	<b>50</b>	FMJ	Sako	68.0	N140				<b>2.50</b>	<b>38.6</b>	<b>1190</b>
<b>3.6</b>	<b>55</b>	SP	Sako	68.0	N140				<b>2.40</b>	<b>37.0</b>	<b>990</b>
<b>3.6</b>	<b>55</b>	SP	Norma	68.0	N160				<b>2.79</b>	<b>43.1</b>	<b>1130</b>

## 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]
<b>3.2</b>	<b>50</b>	SP	Sierra	67.0	N140				<b>2.58</b>	<b>39.8</b>	<b>1160</b>
<b>3.6</b>	<b>55</b>	SP	Sako	67.0	N140				<b>2.49</b>	<b>38.4</b>	<b>1110</b>
<b>4.8</b>	<b>74</b>	FMJ	RWS	67.7	N160				<b>2.64</b>	<b>40.7</b>	<b>995</b>

## 5.6 x 52R

Test barrel: 600 mm, 1 in 10<sup>1</sup>/<sub>2</sub>" 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]
<b>4.6</b>	<b>71</b>	SP	RWS	63.3	N135				<b>1.54</b>	<b>23.8</b>	<b>835</b>
					N140				<b>1.66</b>	<b>25.6</b>	<b>865</b>
					N160				<b>1.96</b>	<b>30.2</b>	<b>830</b>

## 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]
<b>4.4</b>	<b>68</b>	HPFB	Euber	53.6	N130	1.52	23.4	842	<b>1.68</b>	<b>25.9</b>	<b>927</b>
					N133	1.63	25.1	839	<b>1.82</b>	<b>28.1</b>	<b>949</b>
<b>4.5</b>	<b>70</b>	HPBT	Sierra	53.6	N120	1.39	21.5	809	<b>1.55</b>	<b>23.9</b>	<b>901</b>
					N130	1.52	23.5	836	<b>1.69</b>	<b>26.1</b>	<b>925</b>
					N133	1.59	24.5	825	<b>1.79</b>	<b>27.6</b>	<b>934</b>

### 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



## 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]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]	Weight [g]	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]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]	Weight [g]	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

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

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

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

**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	<b>3.20</b>	<b>49.3</b>	<b>1088</b>
					N550	3.02	46.6	968	<b>3.41</b>	<b>52.7</b>	<b>1123</b>
					N160	3.17	48.9	949	<b>3.54</b>	<b>54.7</b>	<b>1106</b>
5.0	77	HP	LAPUA	78.1	N150	2.79	43.0	932	<b>3.18</b>	<b>49.1</b>	<b>1080</b>
					N550	3.03	46.7	956	<b>3.39</b>	<b>52.3</b>	<b>1106</b>
					N160	3.17	48.9	948	<b>3.53</b>	<b>54.5</b>	<b>1095</b>
5.8	90	Scenar	LAPUA	78.1	N550	2.74	42.3	881	<b>3.25</b>	<b>50.2</b>	<b>1024</b>
					N160	2.98	46.0	879	<b>3.44</b>	<b>53.1</b>	<b>1025</b>
					N165	3.24	50.1	885	<b>3.74</b>	<b>57.7</b>	<b>1043</b>
6.5	90	Mega	LAPUA	78.1	N550	2.73	42.1	839	<b>3.19</b>	<b>49.2</b>	<b>977</b>
					N160	2.86	44.1	846	<b>3.29</b>	<b>50.8</b>	<b>865</b>
					N165	3.18	49.1	853	<b>3.64</b>	<b>56.1</b>	<b>995</b>
6.8	105	Spitzer	Speer	77.8	N160	2.52	38.9	785	<b>3.20</b>	<b>49.4</b>	<b>947</b>
					N560	3.00	46.3	828	<b>3.50</b>	<b>54.0</b>	<b>973</b>
					N165	3.08	47.5	837	<b>3.61</b>	<b>55.8</b>	<b>980</b>

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

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

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

## 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]
<b>5.0</b>	<b>77</b>	SP	Norma	66.5	N133				<b>2.75</b>	<b>42.4</b>	<b>1030</b>
					N135				<b>2.86</b>	<b>44.1</b>	<b>1030</b>
					N140				<b>2.92</b>	<b>45.1</b>	<b>1035</b>
<b>5.2</b>	<b>80</b>	FMJ	Norma	66.5	N140				<b>2.88</b>	<b>44.4</b>	<b>1000</b>
<b>5.5</b>	<b>85</b>	HP	Sierra	71.1	N150	2.84	43.8	915	<b>2.99</b>	<b>46.1</b>	<b>991</b>
<b>6.5</b>	<b>100</b>	HP	Sierra	72.4	N140	2.59	40.0	839	<b>2.74</b>	<b>42.3</b>	<b>890</b>
					N540	2.58	39.8	823	<b>2.82</b>	<b>43.5</b>	<b>908</b>
					N150	2.64	40.7	832	<b>2.81</b>	<b>43.4</b>	<b>891</b>
<b>6.5</b>	<b>100</b>	HP	Sierra	72.4	N550	2.76	42.6	850	<b>2.99</b>	<b>46.1</b>	<b>932</b>
					N160	3.07	47.4	850	<b>3.28</b>	<b>50.6</b>	<b>916</b>
					N160	2.99	46.1	838	<b>3.30</b>	<b>50.9</b>	<b>922</b>
<b>6.5</b>	<b>100</b>	FMJ	LAPUA	70.0	N160				<b>3.30</b>	<b>50.9</b>	<b>922</b>

### 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

# 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]	
<b>7.0</b>	<b>108</b>	Scenar	LAPUA	78.0	N140	2.37	36.6	771	<b>2.59</b>	<b>40.0</b>	<b>849</b>	
						N540	2.43	37.5	797	<b>2.65</b>	<b>40.9</b>	<b>877</b>
						N150	2.56	39.5	830	<b>2.73</b>	<b>42.1</b>	<b>881</b>
						N550	2.66	41.0	829	<b>2.88</b>	<b>44.4</b>	<b>912</b>
						N160	3.04	46.9	849	<b>3.20</b>	<b>49.4</b>	<b>903</b>
						N560	3.12	48.1	846	<b>3.35</b>	<b>51.7</b>	<b>918</b>
						N165	3.16	48.8	860	<b>3.32</b>	<b>51.2</b>	<b>914</b>
<b>7.0</b>	<b>108</b>	Silver Jacket Scenar	LAPUA	80.0	N140	2.42	37.3	822	<b>2.70</b>	<b>41.7</b>	<b>898</b>	
						N540	2.52	38.9	825	<b>2.80</b>	<b>43.1</b>	<b>920</b>
						N150	2.49	38.4	817	<b>2.81</b>	<b>43.4</b>	<b>907</b>
<b>7.8</b>	<b>120</b>	HPBT	Sierra	76.8	N140	2.26	34.9	716	<b>2.56</b>	<b>39.5</b>	<b>800</b>	
						N540	2.38	36.7	754	<b>2.64</b>	<b>40.7</b>	<b>833</b>
						N150	2.35	36.3	729	<b>2.63</b>	<b>40.6</b>	<b>809</b>
						N550	2.56	39.5	775	<b>2.81</b>	<b>43.4</b>	<b>863</b>
						N160	2.89	44.6	795	<b>3.14</b>	<b>48.5</b>	<b>860</b>
<b>8.0</b>	<b>123</b>	Scenar	LAPUA	80.0	N560	3.03	46.8	792	<b>3.20</b>	<b>49.4</b>	<b>854</b>	
						N140	2.25	34.7	699	<b>2.61</b>	<b>40.3</b>	<b>810</b>
							N540	2.34	36.2	708	<b>2.70</b>	<b>41.7</b>
<b>8.0</b>	<b>123</b>	Silver Jacket Scenar	LAPUA	80.0	N150	2.37	36.6	703	<b>2.71</b>	<b>41.8</b>	<b>817</b>	
						N150	2.40	37.1	778	<b>2.68</b>	<b>41.3</b>	<b>848</b>
						N550	2.41	37.2	766	<b>2.82</b>	<b>43.5</b>	<b>880</b>
<b>8.4</b>	<b>130</b>	HPBT	Norma	80.0	N160	2.75	42.4	790	<b>2.92</b>	<b>45.1</b>	<b>840</b>	
						N140	2.19	33.8	698	<b>2.47</b>	<b>38.1</b>	<b>775</b>
							N540	2.24	34.6	718	<b>2.52</b>	<b>38.9</b>
						N150	2.19	33.8	691	<b>2.51</b>	<b>38.7</b>	<b>772</b>
							N550	2.46	38.0	733	<b>2.74</b>	<b>42.3</b>
						<b>9.0</b>	<b>139</b>	HPBT	Norma	78.0	N160	2.70
N560	2.94	45.4	770	<b>3.20</b>	<b>49.4</b>							<b>850</b>
N150	2.19	33.8	665	<b>2.49</b>	<b>38.4</b>							<b>749</b>
	N550	2.45	37.8	715	<b>2.66</b>							<b>41.0</b>
N160	2.65	40.9	707	<b>2.90</b>	<b>44.8</b>							<b>782</b>
<b>9.0</b>	<b>139</b>	Scenar	LAPUA	79.4	N560	2.79	43.1	716	<b>3.10</b>	<b>47.8</b>	<b>812</b>	
						N165	2.93	45.2	734	<b>3.18</b>	<b>49.1</b>	<b>806</b>
							N150	2.07	31.9	641	<b>2.40</b>	<b>37.0</b>
						N550	2.38	36.7	693	<b>2.60</b>	<b>40.1</b>	<b>767</b>
						N160	2.67	41.2	720	<b>2.88</b>	<b>44.4</b>	<b>785</b>
<b>9.0</b>	<b>139</b>	Scenar	LAPUA	79.4	N560	2.80	43.2	735	<b>3.04</b>	<b>46.9</b>	<b>809</b>	
						N165	2.88	44.4	731	<b>3.15</b>	<b>48.6</b>	<b>803</b>

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

## 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]
<b>7.0</b>	<b>108</b>	Scenar	LAPUA	79.0	N160	3.30	50.9	939	<b>3.56</b>	<b>54.9</b>	<b>992</b>
					N560	3.63	56.0	941	<b>3.85</b>	<b>59.4</b>	<b>997</b>
					N165	3.70	57.1	935	<b>3.90</b>	<b>60.2</b>	<b>982</b>
<b>7.0</b>	<b>108</b>	Silver Jacket Scenar	LAPUA	79.0	N550	3.08	47.5	911	<b>3.40</b>	<b>52.5</b>	<b>988</b>
					N160	3.31	51.1	933	<b>3.64</b>	<b>56.2</b>	<b>1001</b>
					N560	3.61	55.7	912	<b>3.87</b>	<b>59.7</b>	<b>974</b>
					N165	3.70	57.1	935	<b>3.90</b>	<b>60.2</b>	<b>982</b>

### 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

## 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]
<b>8.0</b>	<b>123</b>	Scenar	LAPUA	79.0	N160	2.80	43.2	812	<b>3.40</b>	<b>52.5</b>	<b>918</b>
						3.42	52.8	871	<b>3.57</b>	<b>55.1</b>	<b>942</b>
						3.14	48.5	848	<b>3.74</b>	<b>57.7</b>	<b>931</b>
<b>8.0</b>	<b>123</b>	Silver Jacket Scenar	LAPUA	79.0	N160	2.98	46.0	828	<b>3.43</b>	<b>52.9</b>	<b>921</b>
						3.54	54.6	881	<b>3.79</b>	<b>58.5</b>	<b>963</b>
						3.61	55.7	848	<b>3.88</b>	<b>59.9</b>	<b>946</b>
<b>9.0</b>	<b>139</b>	Scenar	LAPUA	79.0	N160	2.87	44.3	804	<b>3.07</b>	<b>47.4</b>	<b>852</b>
						3.28	50.6	850	<b>3.50</b>	<b>54.0</b>	<b>892</b>
						2.89	44.6	791	<b>3.26</b>	<b>50.3</b>	<b>847</b>
<b>9.0</b>	<b>139</b>	Silver Jacket Scenar	LAPUA	79.0	N160	2.78	42.9	776	<b>3.27</b>	<b>50.5</b>	<b>855</b>
						3.31	51.1	813	<b>3.57</b>	<b>55.1</b>	<b>901</b>
						3.12	48.1	798	<b>3.68</b>	<b>56.8</b>	<b>881</b>

## 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]
<b>5.5</b>	<b>85</b>	HP	Sierra	73.0	N135				<b>2.80</b>	<b>43.2</b>	<b>1025</b>
<b>6.5</b>	<b>100</b>	SP	Hornady	76.6	N135				<b>2.70</b>	<b>41.7</b>	<b>950</b>
<b>8.1</b>	<b>125</b>	Partition	Nosler	81.0	N140				<b>2.67</b>	<b>41.2</b>	<b>840</b>
<b>9.1</b>	<b>140</b>	SP	Speer	81.5	N140				<b>2.64</b>	<b>40.7</b>	<b>820</b>
<b>10.1</b>	<b>156</b>	SP	Norma	81.5	N160				<b>2.89</b>	<b>44.6</b>	<b>780</b>
<b>10.4</b>	<b>160</b>	RN	Hornady	78.1	N160				<b>2.85</b>	<b>44.0</b>	<b>730</b>

## 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]
<b>5.5</b>	<b>85</b>	HP	Sierra	73.0	N135				<b>2.69</b>	<b>41.5</b>	<b>955</b>
<b>6.5</b>	<b>100</b>	SP	Hornady	76.6	N135				<b>2.62</b>	<b>40.4</b>	<b>880</b>
<b>8.1</b>	<b>125</b>	Partition	Nosler	81.0	N140				<b>2.53</b>	<b>39.0</b>	<b>800</b>
<b>9.1</b>	<b>140</b>	Spitzer	Speer	81.5	N140				<b>2.49</b>	<b>38.4</b>	<b>765</b>
<b>10.1</b>	<b>156</b>	SP	Norma	81.5	N160				<b>2.79</b>	<b>43.1</b>	<b>730</b>

### 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

## 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]
<b>6.8</b>	<b>105</b>	SP	Nosler	82.5	N160				<b>4.34</b>	<b>67.0</b>	<b>1020</b>
<b>8.1</b>	<b>125</b>	Partition	Nosler	86.5	N160				<b>4.15</b>	<b>64.0</b>	<b>955</b>

## .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]
<b>5.5</b>	<b>85</b>	HP	Sierra	78.7	N140				<b>3.72</b>	<b>57.4</b>	<b>1080</b>
					N160				<b>4.35</b>	<b>67.1</b>	<b>1150</b>
<b>9.1</b>	<b>140</b>	FMJ	Hornady	82.7	N140				<b>3.10</b>	<b>47.8</b>	<b>920</b>
					N160				<b>3.70</b>	<b>57.1</b>	<b>910</b>
<b>9.1</b>	<b>140</b>	HPBT	Sierra	84.8	N160	3.01	46.5	770	<b>3.54</b>	<b>54.6</b>	<b>858</b>
					N560	3.13	48.3	789	<b>3.72</b>	<b>57.4</b>	<b>888</b>
<b>10.4</b>	<b>160</b>	FMJ	Norma	84.5	N160				<b>3.65</b>	<b>56.3</b>	<b>820</b>

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

### 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



## .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	<b>4.69</b>	<b>72.4</b>	<b>1134</b>
					N160	4.49	69.4	1019	<b>4.89</b>	<b>75.4</b>	<b>1122</b>
					N165	4.97	76.6	1019	<b>5.42</b>	<b>83.7</b>	<b>1130</b>
8.4	130	PSPCL	Remington	82.2	N160	4.18	64.5	912	<b>4.65</b>	<b>71.7</b>	<b>1010</b>
					N165	4.49	69.3	903	<b>4.97</b>	<b>76.6</b>	<b>1006</b>
					N560	4.60	71.0	923	<b>5.02</b>	<b>77.5</b>	<b>1012</b>
8.7	135	HPBT	Sierra	83.0	N160	4.12	63.6	874	<b>4.46</b>	<b>68.8</b>	<b>971</b>
					N165	4.49	69.3	892	<b>4.72</b>	<b>72.8</b>	<b>995</b>
					N560	4.53	69.9	929	<b>4.84</b>	<b>74.6</b>	<b>1018</b>
9.7	150	Partition	Nosler	82.5	N560	4.29	66.2	874	<b>4.63</b>	<b>71.5</b>	<b>960</b>
					N165	4.20	64.9	848	<b>4.73</b>	<b>73.0</b>	<b>952</b>
					N170	4.61	71.2	853	<b>5.16</b>	<b>79.7</b>	<b>962</b>

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

**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]
<b>7.8</b>	<b>120</b>	Spitzer	Sierra	76.5	N135	2.55	39.4	776	<b>2.81</b>	<b>43.4</b>	<b>861</b>
					N140	2.72	42.0	793	<b>2.99</b>	<b>46.1</b>	<b>876</b>
					N150	2.75	42.4	798	<b>3.02</b>	<b>46.6</b>	<b>878</b>
<b>9.1</b>	<b>140</b>	Ballistic Tip	Nosler	77.5	N140	2.47	38.1	708	<b>2.75</b>	<b>42.4</b>	<b>783</b>
					N150	2.58	39.8	729	<b>2.83</b>	<b>43.7</b>	<b>792</b>
<b>10.4</b>	<b>160</b>	SPBT	Sierra	77.5	N150	2.43	37.5	673	<b>2.69</b>	<b>41.5</b>	<b>736</b>
					N160	2.92	45.1	687	<b>3.20</b>	<b>49.4</b>	<b>774</b>
<b>11.3</b>	<b>175</b>	Mag-Tip	Speer	77.0	N160	2.63	40.6	630	<b>2.97</b>	<b>45.8</b>	<b>707</b>
					N165	2.89	44.6	655	<b>3.21</b>	<b>49.5</b>	<b>719</b>

**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]
<b>7.8</b>	<b>120</b>	Spitzer	Sierra	76.5	N135	2.45	37.8	743	<b>2.70</b>	<b>41.7</b>	<b>826</b>
					N140	2.57	39.7	745	<b>2.86</b>	<b>44.1</b>	<b>836</b>
					N150	2.63	40.6	764	<b>2.89</b>	<b>44.6</b>	<b>840</b>
<b>9.1</b>	<b>140</b>	Ballistic Tip	Nosler	77.5	N140	2.39	36.9	687	<b>2.62</b>	<b>40.4</b>	<b>747</b>
					N150	2.41	37.2	688	<b>2.69</b>	<b>41.5</b>	<b>757</b>
<b>10.4</b>	<b>160</b>	SPBT	Sierra	77.5	N150	2.31	35.6	642	<b>2.54</b>	<b>39.2</b>	<b>701</b>
					N160	2.78	42.9	646	<b>3.08</b>	<b>47.5</b>	<b>739</b>
<b>11.3</b>	<b>175</b>	Mag-Tip	Speer	77.0	N160	2.54	39.2	609	<b>2.81</b>	<b>43.4</b>	<b>670</b>
					N165	2.72	42.0	620	<b>3.00</b>	<b>46.3</b>	<b>677</b>

**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]
<b>5.1</b>	<b>79</b>	SP	Sako	75.4	N120				<b>2.70</b>	<b>41.7</b>	<b>1050</b>
<b>7.8</b>	<b>120</b>	SP	Hornady	82.8	N140				<b>3.31</b>	<b>51.1</b>	<b>970</b>
					N160				<b>3.88</b>	<b>59.9</b>	<b>985</b>
<b>8.0</b>	<b>123</b>	SP	RWS	80.4	N140				<b>3.30</b>	<b>50.9</b>	<b>950</b>
					N160				<b>3.85</b>	<b>59.4</b>	<b>935</b>

**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]
<b>9.0</b>	<b>139</b>	SP	Hornady	84.0	N140				<b>3.15</b>	<b>48.6</b>	<b>880</b>
<b>10.0</b>	<b>155</b>	SP	Hornady	83.8	N160				<b>3.76</b>	<b>58.0</b>	<b>880</b>
<b>10.4</b>	<b>160</b>	SP	Nosler	84.0	N160				<b>3.71</b>	<b>57.3</b>	<b>885</b>
<b>11.0</b>	<b>170</b>	SP	Sako	84.0	N160				<b>3.66</b>	<b>56.5</b>	<b>860</b>
<b>11.3</b>	<b>175</b>	SP	Hornady	82.8	N160				<b>3.68</b>	<b>56.8</b>	<b>840</b>

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

### 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]
<b>6.5</b>	<b>100</b>	HP	Hornady	81.5	N160	4.62	71.3	1037	<b>5.10</b>	<b>78.7</b>	<b>1149</b>
					N560	4.84	74.7	1049	<b>5.30</b>	<b>81.9</b>	<b>1170</b>
<b>7.8</b>	<b>120</b>	Spitzer	Sierra	82.5	N160	4.39	67.7	960	<b>4.83</b>	<b>74.6</b>	<b>1057</b>
					N165	4.76	73.5	973	<b>5.20</b>	<b>80.3</b>	<b>1072</b>
					N560	4.67	72.0	979	<b>5.07</b>	<b>78.3</b>	<b>1079</b>
<b>10.4</b>	<b>160</b>	Spitzer	Sierra	82.5	N160	3.96	61.1	828	<b>4.39</b>	<b>67.8</b>	<b>912</b>
					N165	4.29	66.2	838	<b>4.69</b>	<b>72.4</b>	<b>924</b>
					N560	4.14	63.9	842	<b>4.53</b>	<b>69.9</b>	<b>927</b>
<b>10.9</b>	<b>168</b>	HPBT	Sierra	81.5	N160	3.90	60.2	812	<b>4.23</b>	<b>65.3</b>	<b>879</b>
					N165	4.22	65.2	819	<b>4.51</b>	<b>69.6</b>	<b>888</b>
					N560	4.06	62.6	817	<b>4.42</b>	<b>68.1</b>	<b>909</b>

**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]
<b>6.5</b>	<b>100</b>	Plinker	Speer	42.5	N110	0.86	13.3	595	<b>0.94</b>	<b>14.5</b>	<b>647</b>
<b>7.1</b>	<b>110</b>	Spire Point	Speer	42.5	N110	0.77	11.9	537	<b>0.86</b>	<b>13.3</b>	<b>582</b>

## .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]
<b>6.8</b>	<b>105</b>	HP	Speer	64.5	N130	1.90	29.4	742	<b>2.11</b>	<b>32.5</b>	<b>813</b>
					N133	2.11	32.6	775	<b>2.35</b>	<b>36.3</b>	<b>843</b>
<b>8.5</b>	<b>130</b>	FSP	Speer	64.7	N120	1.60	24.7	655	<b>1.79</b>	<b>27.6</b>	<b>714</b>
					N130	1.77	27.3	669	<b>1.98</b>	<b>30.6</b>	<b>738</b>
					N133	1.91	29.5	682	<b>2.13</b>	<b>32.9</b>	<b>752</b>
<b>9.7</b>	<b>150</b>	FSP	Speer	64.5	N135	2.02	31.2	683	<b>2.24</b>	<b>34.6</b>	<b>748</b>
					N120	1.42	21.9	556	<b>1.57</b>	<b>24.2</b>	<b>605</b>
					N130	1.60	24.7	583	<b>1.78</b>	<b>27.5</b>	<b>641</b>
					N133	1.66	25.6	590	<b>1.85</b>	<b>28.5</b>	<b>645</b>
					N135	1.90	29.3	610	<b>2.10</b>	<b>32.4</b>	<b>669</b>
					N140	2.04	31.5	613	<b>2.25</b>	<b>34.7</b>	<b>683</b>

**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]
<b>11.0</b>	<b>170</b>	FSP	Speer	64.5	N130	1.54	23.8	553	<b>1.71</b>	<b>26.4</b>	<b>602</b>
					N133	1.63	25.2	548	<b>1.79</b>	<b>27.6</b>	<b>594</b>
					N135	1.75	27.0	556	<b>1.95</b>	<b>30.1</b>	<b>614</b>
					N140	1.83	28.2	550	<b>2.05</b>	<b>31.6</b>	<b>617</b>

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

## .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]
<b>3.7</b>	<b>57</b>	ALS*)	LAPUA	67.0	N110	1.45	22.4	911	<b>2.20</b>	<b>33.9</b>	<b>1197</b>
<b>6.5</b>	<b>100</b>	HP	LAPUA	67.0	N120	2.09	32.3	848	<b>2.33</b>	<b>36.0</b>	<b>930</b>
					N130	2.35	36.3	892	<b>2.64</b>	<b>40.7</b>	<b>976</b>
					N135	2.68	41.4	906	<b>3.03</b>	<b>46.8</b>	<b>1002</b>

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

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

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

**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]	
<b>10.0</b>	<b>155</b>	Scenar	LAPUA	75.5	N140	3.15	48.6	808	<b>3.23</b>	<b>49.8</b>	<b>838</b>	
						N150	3.18	49.1	811	<b>3.30</b>	<b>50.9</b>	<b>844</b>
						N540	3.20	49.4	829	<b>3.31</b>	<b>51.1</b>	<b>877</b>
<b>10.9</b>	<b>167</b>	Scenar	LAPUA	75.5	N140	2.95	45.5	755	<b>3.13</b>	<b>48.3</b>	<b>817</b>	
						N150	3.05	47.1	772	<b>3.19</b>	<b>49.2</b>	<b>836</b>
						N540	3.01	46.5	888	<b>3.16</b>	<b>48.8</b>	<b>838</b>
<b>12.0</b>	<b>185</b>	Scenar	LAPUA	75.5	N140	2.70	41.7	724	<b>3.01</b>	<b>46.5</b>	<b>755</b>	
						N150	2.92	45.1	726	<b>3.03</b>	<b>46.8</b>	<b>757</b>
						N540	2.86	44.1	729	<b>3.05</b>	<b>47.1</b>	<b>764</b>

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

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

**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]
<b>12.3</b>	<b>190</b>	HPBT	Sierra	84.0	N150	2.90	44.8	695	<b>3.20</b>	<b>49.3</b>	<b>767</b>
					N550	3.07	47.4	708	<b>3.49</b>	<b>53.8</b>	<b>812</b>
					N160	3.42	52.7	724	<b>3.81</b>	<b>58.8</b>	<b>795</b>
					N560	3.57	55.1	721	<b>4.04</b>	<b>62.4</b>	<b>825</b>
<b>13.0</b>	<b>200</b>	Partition	Nosler	84.0	N150	2.79	43.0	669	<b>3.08</b>	<b>47.5</b>	<b>724</b>
					N160	3.38	52.1	704	<b>3.73</b>	<b>57.6</b>	<b>765</b>
<b>14.3</b>	<b>220</b>	RN	Hornady	84.0	N160	3.29	50.7	654	<b>3.63</b>	<b>56.0</b>	<b>722</b>
					N560	3.47	53.5	672	<b>3.97</b>	<b>61.3</b>	<b>767</b>

## .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]
<b>8.1</b>	<b>125</b>	FMJ	Sako	88.5	N160				<b>5.00</b>	<b>77.2</b>	<b>1100</b>
<b>9.7</b>	<b>150</b>	Spitzer	Speer	91.0	N160				<b>4.87</b>	<b>75.2</b>	<b>950</b>
<b>10.0</b>	<b>155</b>	SP	Sako	91.0	N160				<b>4.69</b>	<b>72.4</b>	<b>915</b>
<b>10.7</b>	<b>165</b>	Spitzer	Speer	91.2	N160				<b>4.55</b>	<b>70.2</b>	<b>885</b>
<b>11.7</b>	<b>180</b>	SP	Sako	91.2	N160				<b>4.40</b>	<b>67.9</b>	<b>875</b>
<b>14.3</b>	<b>220</b>	RN	Hornady	90.9	N160				<b>4.22</b>	<b>65.1</b>	<b>775</b>

Test barrel: 620 mm, 1 in 10" twist

Primers: Large Rifle Magnum

Cases: LAPUA, trim-to length 66.30 mm

## .300 Winchester Magnum

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]
<b>7.1</b>	<b>110</b>	SP	Hornady	83.0	N160	4.96	76.5	959	<b>5.40</b>	<b>83.3</b>	<b>1063</b>
<b>8.5</b>	<b>130</b>	HP	LAPUA	84.2	N160	4.61	71.1	881	<b>5.14</b>	<b>79.3</b>	<b>997</b>
<b>8.5</b>	<b>150</b>	Ballistic Tip	Nosler	84.8	N160	4.47	69.0	850	<b>4.95</b>	<b>76.4</b>	<b>944</b>
					N165	4.88	75.3	883	<b>5.39</b>	<b>83.2</b>	<b>974</b>
<b>10.0</b>	<b>155</b>	Scenar	LAPUA	84.5	N160	4.13	63.7	833	<b>4.66</b>	<b>71.8</b>	<b>958</b>
					N560	4.48	69.1	849	<b>5.00</b>	<b>77.2</b>	<b>969</b>
					N165	4.69	72.4	864	<b>5.31</b>	<b>81.9</b>	<b>992</b>
<b>10.9</b>	<b>167</b>	Scenar	LAPUA	84.8	N160	4.47	69.0	830	<b>4.83</b>	<b>74.5</b>	<b>910</b>
					N165	4.76	73.5	839	<b>5.18</b>	<b>79.9</b>	<b>924</b>

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

## .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]
<b>8.1</b>	<b>125</b>	Ballistic Tip	Nosler	90.0	N160	5.20	80.2	969	<b>5.75</b>	<b>88.7</b>	<b>1101</b>
<b>9.7</b>	<b>150</b>	Ballistic Tip	Nosler	90.1	N160	4.90	75.6	895	<b>5.42</b>	<b>83.6</b>	<b>1000</b>
					N165	5.31	81.9	904	<b>5.89</b>	<b>90.9</b>	<b>1006</b>
<b>10.7</b>	<b>165</b>	SPBT	Speer	90.3	N160	4.85	74.8	859	<b>5.37</b>	<b>82.9</b>	<b>973</b>
					N165	5.24	80.9	860	<b>5.80</b>	<b>89.5</b>	<b>980</b>
<b>11.7</b>	<b>180</b>	SP	Hornady	90.3	N160	4.71	72.7	834	<b>5.19</b>	<b>80.1</b>	<b>926</b>
					N165	5.09	78.5	840	<b>5.62</b>	<b>86.7</b>	<b>939</b>
<b>13.0</b>	<b>200</b>	HPBT	Sierra	90.3	N560	4.70	72.5	821	<b>5.17</b>	<b>79.8</b>	<b>903</b>
					N165	4.58	70.7	795	<b>5.24</b>	<b>80.9</b>	<b>888</b>
					N170	4.59	70.8	781	<b>5.51</b>	<b>85.0</b>	<b>890</b>

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

## .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]
<b>10.7</b>	<b>165</b>	Partition	Nosler	89.5	N160	5.20	80.2	919	<b>5.37</b>	<b>82.9</b>	<b>951</b>
					N560	5.45	84.1	917	<b>5.80</b>	<b>89.5</b>	<b>976</b>
					N165	5.67	87.5	930	<b>5.89</b>	<b>90.9</b>	<b>973</b>
<b>11.7</b>	<b>180</b>	"X"	Barnes	89.5	N560	4.82	74.4	887	<b>5.23</b>	<b>80.7</b>	<b>920</b>
					N165	4.69	72.4	858	<b>5.02</b>	<b>77.5</b>	<b>901</b>
					N170	5.22	80.6	871	<b>5.69</b>	<b>87.8</b>	<b>914</b>
<b>12.0</b>	<b>185</b>	Scenar	LAPUA	91.4	N560	5.53	85.3	912	<b>5.73</b>	<b>88.4</b>	<b>908</b>
					N165	5.35	82.6	900	<b>5.76</b>	<b>88.9</b>	<b>918</b>
					N170	6.00	92.6	898	<b>6.25</b>	<b>96.5</b>	<b>932</b>

**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]
<b>10.0</b>	<b>155</b>	Scenar	LAPUA	93.0	N160	6.10	94.1	1001	<b>6.41</b>	<b>99.0</b>	<b>1052</b>
					N165	6.68	103.1	1014	<b>6.94</b>	<b>107.1</b>	<b>1072</b>
					N170	7.23	111.6	1005	<b>7.54</b>	<b>116.4</b>	<b>1066</b>
<b>11.0</b>	<b>170</b>	Lock Base	LAPUA	93.0	N165	6.33	97.7	953	<b>6.67</b>	<b>102.9</b>	<b>999</b>
					N170	6.94	111.1	953	<b>7.20</b>	<b>111.1</b>	<b>1005</b>
					24N41	7.31	112.8	977	<b>7.83</b>	<b>120.9</b>	<b>1057</b>
<b>12.0</b>	<b>185</b>	Scenar	LAPUA	93.0	N170	6.69	103.3	942	<b>7.12</b>	<b>109.8</b>	<b>999</b>
					24N41	7.16	110.5	955	<b>7.58</b>	<b>117.0</b>	<b>1020</b>
					20N29	7.94	122.5	968	<b>8.18</b>	<b>126.2</b>	<b>1000</b>
<b>13.0</b>	<b>200</b>	HPBT	Sierra	93.0	24N41	6.90	106.5	939	<b>7.20</b>	<b>111.1</b>	<b>973</b>
					20N29	7.52	116.0	914	<b>7.88</b>	<b>121.6</b>	<b>976</b>
<b>14.3</b>	<b>220</b>	Sierra	HPBT	93.0	20N29	7.14	110.1	869	<b>7.64</b>	<b>117.9</b>	<b>933</b>

**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]
<b>3.7</b>	<b>57</b>	FMJ	LAPUA	55.7	N110	1.31	20.2	855	<b>1.60</b>	<b>24.7</b>	<b>952</b>
<b>8.0</b>	<b>123</b>	FMJ	Sako	55.7	N120				<b>1.72</b>	<b>26.5</b>	<b>740</b>
<b>8.0</b>	<b>123</b>	SP	Sako	54.2	N120				<b>1.73</b>	<b>26.7</b>	<b>720</b>
<b>8.0</b>	<b>123</b>	Mega	LAPUA	52.4	N120	1.42	22.0	602	<b>1.66</b>	<b>25.7</b>	<b>703</b>
					N130	1.58	24.4	634	<b>1.77</b>	<b>27.3</b>	<b>719</b>

## .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]
<b>11.7</b>	<b>180</b>	SP	Sako	73.6	N140				<b>2.70</b>	<b>41.7</b>	<b>775</b>

### 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

## 8 x 72R

Test barrel: 610 mm, 1 in 9<sup>1</sup>/<sub>2</sub>" 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]
<b>12.7</b>	<b>196</b>	SP	RWS*)	90.4	N140			<b>2.68</b>	<b>41.4</b>	<b>700</b>

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

## 8mm Mauser (8 x 57 JS)

Test barrel: 620 mm, 1 in 9<sup>1</sup>/<sub>2</sub>" 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]	
<b>8.1</b>	<b>125</b>	SP	Hornady	74.0	N130	2.80	43.2	874	<b>3.12</b>	<b>48.1</b>	<b>950</b>
					N133	3.14	48.5	883	<b>3.50</b>	<b>54.0</b>	<b>979</b>
					N135	3.22	49.7	882	<b>3.57</b>	<b>55.1</b>	<b>974</b>
<b>9.7</b>	<b>150</b>	Spitzer	Speer	76.0	N135	2.97	45.8	801	<b>3.31</b>	<b>51.1</b>	<b>880</b>
					N140	3.13	48.3	799	<b>3.49</b>	<b>53.9</b>	<b>892</b>
<b>11.0</b>	<b>170</b>	SP	Speer	77.0	N135	2.86	44.1	748	<b>3.18</b>	<b>49.1</b>	<b>829</b>
					N140	2.99	46.1	747	<b>3.33</b>	<b>51.4</b>	<b>838</b>
					N150	3.13	48.3	761	<b>3.48</b>	<b>53.7</b>	<b>853</b>
<b>13.0</b>	<b>200</b>	Spitzer	Speer	79.5	N140	2.77	42.7	661	<b>3.08</b>	<b>47.5</b>	<b>759</b>
					N150	2.86	44.1	680	<b>3.19</b>	<b>49.2</b>	<b>763</b>
<b>13.0</b>	<b>200</b>	Partition	Nosler	81.0	N160	3.27	50.5	681	<b>3.64</b>	<b>56.2</b>	<b>785</b>

## 8 x 57 JRS

Test barrel: 610 mm, 1 in 9<sup>1</sup>/<sub>2</sub>" 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]
<b>9.7</b>	<b>150</b>	Spitzer	Speer	72.5	N140			<b>3.46</b>	<b>53.4</b>	<b>870</b>
<b>11.0</b>	<b>170</b>	SP	RWS	73.5	N140			<b>3.18</b>	<b>49.1</b>	<b>810</b>
<b>11.7</b>	<b>180</b>	KS	RWS	73.5	N140			<b>3.28</b>	<b>50.6</b>	<b>800</b>
<b>12.1</b>	<b>187</b>	HMK	RWS	77.2	N140			<b>3.15</b>	<b>48.6</b>	<b>795</b>

### 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

# 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]
<b>12.1</b>	<b>187</b>	SG	RWS	86.0	N160				<b>5.05</b>	<b>77.9</b>	<b>935</b>
<b>12.7</b>	<b>196</b>	TMR	RWS	86.4	N160				<b>5.00</b>	<b>77.2</b>	<b>925</b>
<b>13.0</b>	<b>200</b>	Spitzer	Speer	86.5	N160				<b>4.68</b>	<b>72.2</b>	<b>880</b>

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

\*) The CIP maximum cartridge overall length is exceeded.

### 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



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

# 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		Type	Mfg.	C.O.L.	Type	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]		[g]	[grs]	[m/s]	[g]	[grs]	[m/s]
<b>16.5</b>	<b>255</b>	SP	Sako	74.3	N140				<b>3.30</b>	<b>50.9</b>	<b>690</b>

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

**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

## 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]
<b>16.7</b>	<b>258</b>	HMK	RWS	81.7	N135				<b>3.73</b>	<b>57.6</b>	<b>765</b>
<b>17.5</b>	<b>270</b>	Forex	LAPUA	80.6	N135	2.94	45.4	589	<b>3.52</b>	<b>54.3</b>	<b>700</b>
					N140	2.98	46.0	617	<b>3.61</b>	<b>55.7</b>	<b>710</b>
					N150	3.40	52.5	639	<b>3.91</b>	<b>60.4</b>	<b>728</b>
<b>18.5</b>	<b>285</b>	TMR	RWS	82.1	N135				<b>3.53</b>	<b>54.5</b>	<b>710</b>
<b>18.5</b>	<b>285</b>	Mega	LAPUA	83.4	N135	3.01	46.5	600	<b>3.50</b>	<b>54.0</b>	<b>700</b>
					N140	3.30	50.9	600	<b>3.69</b>	<b>56.9</b>	<b>675</b>

## 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]
<b>16.7</b>	<b>258</b>	HMK	RWS	85.5	N140				<b>4.40</b>	<b>67.9</b>	<b>815</b>
<b>18.5</b>	<b>285</b>	TMR	RWS	84.5	N140				<b>4.34</b>	<b>67.0</b>	<b>770</b>
<b>19.0</b>	<b>293</b>	TUG	RWS	85.5	N160				<b>4.92</b>	<b>75.9</b>	<b>777</b>

## 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]
<b>15.0</b>	<b>231</b>	SP	Norma	92.1	N140	3.72	57.4	718	<b>4.10</b>	<b>63.3</b>	<b>779</b>
<b>16.5</b>	<b>256</b>	SP	Sako	92.2	N140	3.50	54.0	654	<b>3.86</b>	<b>59.6</b>	<b>723</b>
<b>17.5</b>	<b>270</b>	Forex	LAPUA	91.5	N135	3.24	50.0	627	<b>3.76</b>	<b>58.0</b>	<b>702</b>
					N140	2.23	49.9	631	<b>3.52</b>	<b>54.4</b>	<b>699</b>
<b>18.5</b>	<b>285</b>	Mega	LAPUA	92.2	N140	3.22	49.7	614	<b>3.57</b>	<b>55.1</b>	<b>669</b>
<b>18.5</b>	<b>285</b>	X	Barnes	97.6*	N140	3.11	48.0	614	<b>3.42</b>	<b>52.8</b>	<b>660</b>
<b>19.0</b>	<b>293</b>	TUG	RWS	95.5*	N140	3.24	50.0	603	<b>3.59</b>	<b>55.4</b>	<b>670</b>

\*) The CIP maximum cartridge overall length is exceeded.

### 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

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

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

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

### 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

# .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]
<b>19.4</b>	<b>300</b>	HP	Sierra	74.5	N120	4.19	64.7	740	<b>4.54</b>	<b>70.1</b>	<b>792</b>
<b>22.7</b>	<b>350</b>	SP	Speer	78.5	N120	4.12	63.3	697	<b>4.48</b>	<b>69.1</b>	<b>751</b>
					N130	4.47	69.0	723	<b>4.78</b>	<b>73.8</b>	<b>767</b>
<b>32.4</b>	<b>500</b>	RN	Hornady	84.5	N135	4.24	65.4	588	<b>4.56</b>	<b>70.4</b>	<b>628</b>
<b>32.4</b>	<b>500</b>	AGS	Speer	84.5	N135	4.38	67.6	585	<b>4.70</b>	<b>72.5</b>	<b>626</b>
<b>32.4</b>	<b>500</b>	RN	Hornady	84.5	N140	4.54	70.1	604	<b>4.83</b>	<b>74.5</b>	<b>640</b>

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

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

# HANDGUN 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 respective 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.

## 7mm TCU

Test barrel: 360 mm, 1 in 10" twist

Primers: Small Rifle

Cases: Fireformed LAPUA .223 Remington,  
trim-to length 44.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight [g]	Weight [grs]	Type	Mfg.	C.O.L. [mm]	Type	Weight [g]	Velocity [m/s]	Weight [g]	Velocity [m/s]	Weight [grs]	Velocity [m/s]
<b>6.5</b>	<b>100</b>	HP	Hornady	62.5	N120	1.48	22.8	667	<b>1.64</b>	<b>25.3</b>	<b>744</b>
					N130	1.62	25.0	672	<b>1.79</b>	<b>27.6</b>	<b>753</b>
					N133	1.77	27.3	695	<b>1.96</b>	<b>30.2</b>	<b>774</b>
<b>7.8</b>	<b>120</b>	SSSP	Hornady	63.5	N120	1.32	20.4	606	<b>1.45</b>	<b>22.4</b>	<b>655</b>
					N130	1.45	22.4	610	<b>1.61</b>	<b>24.8</b>	<b>673</b>
					N133	1.62	25.0	630	<b>1.81</b>	<b>27.9</b>	<b>701</b>
<b>8.4</b>	<b>130</b>	Spitzer	Speer	65.0	N120	1.24	19.1	542	<b>1.38</b>	<b>21.3</b>	<b>596</b>
					N130	1.40	21.6	573	<b>1.55</b>	<b>23.9</b>	<b>626</b>
					N133	1.46	22.5	576	<b>1.62</b>	<b>25.0</b>	<b>633</b>
<b>9.7</b>	<b>150</b>	SBT	Sierra	65.0	N120	1.17	18.1	513	<b>1.30</b>	<b>20.1</b>	<b>562</b>
					N130	1.31	20.2	535	<b>1.45</b>	<b>22.4</b>	<b>586</b>
					N133	1.38	21.3	542	<b>1.53</b>	<b>23.6</b>	<b>599</b>
					N135	1.44	22.2	538	<b>1.60</b>	<b>24.7</b>	<b>597</b>
<b>10.4</b>	<b>160</b>	SBT	Sierra	66.0	N120	1.12	17.3	480	<b>1.25</b>	<b>19.3</b>	<b>531</b>
					N130	1.26	19.4	505	<b>1.41</b>	<b>21.8</b>	<b>558</b>
					N133	1.31	20.2	511	<b>1.45</b>	<b>22.4</b>	<b>559</b>
					N135	1.45	22.4	531	<b>1.61</b>	<b>24.8</b>	<b>582</b>
					N540	1.48	22.8	544	<b>1.63</b>	<b>25.2</b>	<b>598</b>

NOTE: This cartridge is not supported by CIP or SAAMI. The maximum loads does not exceed 320 MPa.

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

## 7mm BR Remington

Test barrel: 375 mm, 1 in 10" twist

Primers: Small Rifle

Cases: Remington, trim-to length 38.40 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]
<b>6.5</b>	<b>100</b>	HP	Hornady	56.0	N120	1.74	26.9	737	<b>1.93</b>	<b>29.8</b>	<b>829</b>
					N130	1.89	30.6	746	<b>2.10</b>	<b>32.4</b>	<b>838</b>
<b>7.8</b>	<b>120</b>	SSSP	Hornady	56.6	N120	1.61	24.8	662	<b>1.80</b>	<b>27.8</b>	<b>738</b>
					N130	1.74	26.9	668	<b>1.94</b>	<b>29.9</b>	<b>784</b>
<b>9.1</b>	<b>140</b>	Ballistic Tip	Nosler	60.3	N133	1.90	29.3	700	<b>2.11</b>	<b>32.6</b>	<b>771</b>
					N120	1.43	22.1	588	<b>1.58</b>	<b>24.4</b>	<b>640</b>
					N130	1.58	24.4	595	<b>1.73</b>	<b>26.7</b>	<b>661</b>
<b>9.7</b>	<b>150</b>	Ballistic Tip	Nosler	60.3	N133	1.66	25.6	607	<b>1.84</b>	<b>28.4</b>	<b>671</b>
					N120	1.40	21.6	569	<b>1.54</b>	<b>23.8</b>	<b>619</b>
					N130	1.51	23.3	577	<b>1.67</b>	<b>25.8</b>	<b>635</b>
<b>10.4</b>	<b>160</b>	HPBT	Sierra	59.7	N133	1.60	24.7	587	<b>1.77</b>	<b>27.3</b>	<b>642</b>
					N135	1.69	26.1	584	<b>1.87</b>	<b>28.9</b>	<b>650</b>
					N120	1.29	19.9	536	<b>1.42</b>	<b>21.9</b>	<b>580</b>
					N130	1.40	21.6	552	<b>1.55</b>	<b>23.9</b>	<b>602</b>
					N133	1.52	23.5	560	<b>1.69</b>	<b>26.1</b>	<b>619</b>
					N135	1.61	24.8	567	<b>1.79</b>	<b>27.6</b>	<b>630</b>

## 7 x 49 GJW

Test barrel: 380 mm, 1 in 9" twist

Primers: Small Rifle

Cases: MFT, trim-to length 48.75 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]
<b>9.7</b>	<b>150</b>	Ballistic Tip	Nosler	73.5	N130	1.52	23.4	592	<b>1.67</b>	<b>25.7</b>	<b>642</b>
					N133	1.59	24.6	591	<b>1.74</b>	<b>26.9</b>	<b>644</b>
					N135	1.72	26.6	608	<b>1.86</b>	<b>28.7</b>	<b>658</b>
<b>10.9</b>	<b>168</b>	HPBT	Sierra	73.5	N130	1.47	22.8	562	<b>1.63</b>	<b>25.1</b>	<b>611</b>
					N133	1.56	24.1	565	<b>1.71</b>	<b>26.5</b>	<b>617</b>
					N135	1.70	26.3	585	<b>1.83</b>	<b>28.2</b>	<b>631</b>
					N140	1.77	27.3	585	<b>1.91</b>	<b>29.5</b>	<b>636</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

## .30 Luger

Test barrel: 200 mm, 1 in 11" twist  
Primers: Small Pistol  
Cases: LAPUA, trim-to length 21.40 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]
6.0	93	FMJ	Sako	29.7	N340			0.35	5.4	390

## .32 S.&W. Long N.P.

Test barrel: 175 mm, 1 in 18<sup>1</sup>/<sub>2</sub>" twist  
Primers: Small Pistol  
Cases: Remington, trim-to length 23.20 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]
5.4	83	LWC	LAPUA	24.6	N310	0.09	1.4	0.11	1.7	258
6.4	98	LWC	LAPUA	24.6	N310	0.07	1.1	0.08	1.2	208
6.4	98	LRN	LAPUA	32.3	N310	0.12	1.9	0.14	2.2	277

## .32 S.&W. Long Wadcutter

Test barrel: 175 mm, 1 in 18<sup>1</sup>/<sub>2</sub>" twist  
Primers: Small Pistol  
Cases: LAPUA, trim-to length 23.20 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]
5.35	83	LWC	LAPUA	24.6	N310	0.11	1.7	0.13	2.0	280
6.35	98	LWC	LAPUA	24.6	N310	0.10	1.5	0.12	1.8	260

**NOTE: THE LOADS LISTED ABOVE ARE SAFE ONLY IN MODERN TARGET PISTOLS AND REVOLVERS, IF USED TOGETHER WITH LAPUA HEADSTAMPED BRASS!**

## .380 ACP

Test barrel: 90 mm, 1 in 10" twist  
Primers: Small Pistol  
Cases: Sako, trim-to length 17.20 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]
5.8	90	HP-XTP	Hornady	24.9	N310			0.18	2.8	308
					N320			0.23	3.5	327
6.2	95	TMJ	Speer	24.9	N310			0.18	2.8	303
					N320			0.23	3.6	325
6.5	100	FMJ	Hornady	24.9	N310			0.16	2.5	278
					N320			0.21	3.3	307

### 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

# 9mm Luger

Test barrel: 100 mm, 1 in 10" twist

Primers: Small Pistol

Cases: Remington, trim-to length 19.00 mm

		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]	
<b>5.8</b>	<b>90</b>	HP-XTP	Hornady	27.0	N310	0.26	4.0	373	<b>0.28</b>	<b>4.3</b>	<b>388</b>	
						N320	0.32	4.9	406	<b>0.35</b>	<b>5.4</b>	<b>426</b>
						N330	0.37	5.6	425	<b>0.40</b>	<b>6.2</b>	<b>443</b>
						N340	0.37	5.7	430	<b>0.41</b>	<b>6.4</b>	<b>460</b>
						N350	0.43	6.6	432	<b>0.48</b>	<b>7.4</b>	<b>464</b>
<b>6.5</b>	<b>100</b>	HP	Speer	27.5	3N37	0.43	6.6	443	<b>0.48</b>	<b>7.4</b>	<b>467</b>	
						N320	0.31	4.8	379	<b>0.34</b>	<b>5.3</b>	<b>405</b>
						N330	0.36	5.5	399	<b>0.39</b>	<b>6.0</b>	<b>422</b>
						N340	0.38	5.9	402	<b>0.43</b>	<b>6.6</b>	<b>438</b>
<b>7.5</b>	<b>115</b>	HP-XTP	Hornady	29.0	3N37	0.43	6.7	407	<b>0.49</b>	<b>7.5</b>	<b>443</b>	
						N320	0.27	4.1	346	<b>0.30</b>	<b>4.6</b>	<b>368</b>
						N330	0.32	5.0	362	<b>0.36</b>	<b>5.5</b>	<b>388</b>
<b>7.5</b>	<b>115</b>	RN	Rainier	29.0	N340	0.35	5.5	373	<b>0.39</b>	<b>6.1</b>	<b>404</b>	
						N350	0.39	6.0	379	<b>0.43</b>	<b>6.6</b>	<b>402</b>
						N320	0.26	4.1	331	<b>0.29</b>	<b>4.5</b>	<b>353</b>
						N330	0.31	4.7	347	<b>0.33</b>	<b>5.2</b>	<b>366</b>
						N340	0.33	5.1	358	<b>0.36</b>	<b>5.6</b>	<b>380</b>
<b>7.8</b>	<b>120</b>	CEPP	LAPUA	28.7	N350	0.38	5.8	371	<b>0.42</b>	<b>6.5</b>	<b>397</b>	
						3N37	0.40	6.2	369	<b>0.43</b>	<b>6.6</b>	<b>387</b>
						N320	0.26	4.0	314	<b>0.28</b>	<b>4.4</b>	<b>336</b>
						N330	0.31	4.8	345	<b>0.34</b>	<b>5.3</b>	<b>368</b>
						N340	0.33	5.1	352	<b>0.37</b>	<b>5.7</b>	<b>376</b>
<b>8.0</b>	<b>124</b>	LSWC	Intercast	29.0	N350	0.39	6.0	364	<b>0.42</b>	<b>6.5</b>	<b>389</b>	
						3N37	0.37	5.7	345	<b>0.40</b>	<b>6.2</b>	<b>368</b>
						N320	0.25	3.8	331	<b>0.27</b>	<b>4.2</b>	<b>347</b>
						N330	0.29	4.5	348	<b>0.31</b>	<b>4.9</b>	<b>362</b>
						N340	0.31	4.8	352	<b>0.34</b>	<b>5.3</b>	<b>375</b>
<b>8.0</b>	<b>124</b>	FMJ/FP	Hornady	29.0	3N37	0.36	5.5	357	<b>0.39</b>	<b>6.0</b>	<b>376</b>	
						N350	0.33	5.1	350	<b>0.36</b>	<b>5.6</b>	<b>367</b>
						N320	0.26	4.0	316	<b>0.28</b>	<b>4.4</b>	<b>340</b>
						N330	0.32	5.0	343	<b>0.34</b>	<b>5.3</b>	<b>365</b>
						N340	0.35	5.3	353	<b>0.37</b>	<b>5.8</b>	<b>376</b>
<b>8.0</b>	<b>124</b>	RN	Rainier	29.0	3N37	0.40	6.1	362	<b>0.43</b>	<b>6.6</b>	<b>382</b>	
						N350	0.36	5.6	354	<b>0.40</b>	<b>6.1</b>	<b>376</b>
						3N38	0.42	6.5	337	<b>0.49</b>	<b>7.6</b>	<b>377</b>
						N320	0.25	3.8	310	<b>0.27</b>	<b>4.2</b>	<b>331</b>
						N330	0.28	4.4	329	<b>0.31</b>	<b>4.8</b>	<b>349</b>
<b>8.0</b>	<b>124</b>	RN	Rainier	29.0	N340	0.31	4.7	334	<b>0.34</b>	<b>5.3</b>	<b>357</b>	
						N350	0.35	5.5	346	<b>0.39</b>	<b>6.1</b>	<b>371</b>
						3N37	0.36	5.5	351	<b>0.40</b>	<b>6.1</b>	<b>370</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED



# 9mm Luger

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]
8.4	130	FMJ	Sierra	29.0	N320	0.24	3.7	304	<b>0.26</b>	<b>4.1</b>	<b>324</b>
					N330	0.27	4.2	319	<b>0.30</b>	<b>4.6</b>	<b>338</b>
					N340	0.29	4.4	329	<b>0.31</b>	<b>4.9</b>	<b>345</b>
					N350	0.34	5.2	334	<b>0.36</b>	<b>5.6</b>	<b>350</b>
					3N37	0.33	5.1	330	<b>0.37</b>	<b>5.7</b>	<b>349</b>
					3N38	0.39	6.0	310	<b>0.44</b>	<b>6.8</b>	<b>355</b>
					N105	0.46	7.2	357	<b>0.48</b>	<b>7.5</b>	<b>382</b>
9.4	145	LRN	Intercast	29.0	N330	0.23	3.5	290	<b>0.25</b>	<b>3.9</b>	<b>310</b>
					N340	0.26	4.0	304	<b>0.28</b>	<b>4.4</b>	<b>323</b>
					N350	0.28	4.3	302	<b>0.31</b>	<b>4.8</b>	<b>325</b>
					3N37	0.30	4.6	305	<b>0.33</b>	<b>5.1</b>	<b>327</b>
9.5	147	HP/XTP	Hornady	29.0	N330	0.26	4.1	299	<b>0.28</b>	<b>4.4</b>	<b>320</b>
					N340	0.26	4.1	294	<b>0.28</b>	<b>4.4</b>	<b>314</b>
					3N37	0.31	4.8	304	<b>0.34</b>	<b>5.3</b>	<b>326</b>
					N350	0.30	4.7	308	<b>0.33</b>	<b>5.1</b>	<b>332</b>
					3N38	0.36	5.5	303	<b>0.40</b>	<b>6.2</b>	<b>334</b>
					N105	0.40	6.2	322	<b>0.42</b>	<b>6.5</b>	<b>343</b>
9.5	147	RN	Rainier	29.0	N330	0.23	3.6	276	<b>0.25</b>	<b>3.9</b>	<b>291</b>
					N340	0.25	3.9	277	<b>0.27</b>	<b>4.2</b>	<b>298</b>
					N350	0.28	4.3	291	<b>0.31</b>	<b>4.8</b>	<b>315</b>
					3N37	0.30	4.6	291	<b>0.32</b>	<b>5.0</b>	<b>313</b>
9.7	150	CEPP	Lapua	28.7	N330	0.23	3.5	269	<b>0.25</b>	<b>3.8</b>	<b>288</b>
					N340	0.25	3.9	280	<b>0.27</b>	<b>4.2</b>	<b>299</b>
					N350	0.28	4.4	290	<b>0.30</b>	<b>4.7</b>	<b>308</b>
					3N37	0.28	4.4	281	<b>0.31</b>	<b>4.8</b>	<b>303</b>

# 9 x 21

Test barrel: 140 mm, 1 in 10" twist

Primers: Small Pistol

Cases: Tanfoglio, trim-to length 21.00 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]
6.5	100	HP	Speer	29.0	N340	0.39	6.0	419	<b>0.43</b>	<b>6.6</b>	<b>447</b>
					3N37	0.44	6.8	430	<b>0.49</b>	<b>7.5</b>	<b>456</b>
					N350	0.46	7.0	436	<b>0.50</b>	<b>7.7</b>	<b>462</b>
7.5	115	FMJ	Sierra	29.5	N340	0.35	5.4	383	<b>0.38</b>	<b>5.9</b>	<b>403</b>
					3N37	0.39	6.0	378	<b>0.43</b>	<b>6.6</b>	<b>405</b>
					N350	0.39	6.1	391	<b>0.43</b>	<b>6.6</b>	<b>413</b>
					N105	0.53	8.2	413	<b>0.57</b>	<b>8.8</b>	<b>441</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

# 9 x 21

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]
<b>8.0</b>	<b>123</b>	FMJ	LAPUA	29.5	N340	0.31	4.8	350	<b>0.34</b>	<b>5.3</b>	<b>366</b>
					3N37	0.35	5.4	356	<b>0.39</b>	<b>6.0</b>	<b>375</b>
					N350	0.35	5.5	351	<b>0.38</b>	<b>5.9</b>	<b>372</b>
					N105	0.45	6.9	375	<b>0.48</b>	<b>7.5</b>	<b>400</b>
<b>9.5</b>	<b>147</b>	HP-XTP	Hornady	29.5	3N37	0.32	4.9	312	<b>0.35</b>	<b>5.3</b>	<b>331</b>
					N350	0.30	4.6	326	<b>0.33</b>	<b>5.0</b>	<b>340</b>
					N105	0.38	5.9	329	<b>0.41</b>	<b>6.4</b>	<b>350</b>

# .357 SIG

Test barrel: 130 mm, 1 in 16" twist

Primers: Small Pistol

Cases: Starline, trim-to length 21.85 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]
<b>6.2</b>	<b>95</b>	FMJ	Speer	28.5	N340	0.53	8.1	482	<b>0.60</b>	<b>9.2</b>	<b>482</b>
					3N37	0.59	9.2	491	<b>0.67</b>	<b>10.3</b>	<b>534</b>
					N350	0.60	9.3	492	<b>0.68</b>	<b>10.5</b>	<b>539</b>
<b>7.5</b>	<b>115</b>	FMJ	Sierra	28.5	N340	0.44	6.9	423	<b>0.52</b>	<b>8.0</b>	<b>466</b>
					3N37	0.51	7.8	434	<b>0.58</b>	<b>8.9</b>	<b>474</b>
					N350	0.50	7.7	431	<b>0.58</b>	<b>9.0</b>	<b>478</b>
<b>8.0</b>	<b>123</b>	FMJ	LAPUA	28.5	N340	0.42	6.5	398	<b>0.50</b>	<b>7.6</b>	<b>441</b>
					3N37	0.49	7.5	409	<b>0.56</b>	<b>8.6</b>	<b>451</b>
					N350	0.49	7.5	404	<b>0.56</b>	<b>8.7</b>	<b>454</b>
<b>8.0</b>	<b>123</b>	Megashock	LAPUA	28.5	N340	0.42	6.5	398	<b>0.50</b>	<b>7.7</b>	<b>423</b>
					3N37	0.48	7.5	411	<b>0.56</b>	<b>8.6</b>	<b>453</b>
					N350	0.48	7.4	409	<b>0.57</b>	<b>8.8</b>	<b>449</b>
<b>8.4</b>	<b>130</b>	RN B	Rainier	28.5	N340	0.42	6.5	385	<b>0.48</b>	<b>7.4</b>	<b>423</b>
					3N37	0.48	7.5	391	<b>0.54</b>	<b>8.4</b>	<b>414</b>
					N350	0.47	7.3	400	<b>0.55</b>	<b>8.5</b>	<b>443</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

# .38 Super Auto

Test barrel: 140 mm, 1 in 16" twist

Primers: Small Pistol

Cases: Remington +P, trim-to length 22.70 mm

Bullet				Powder	Starting load			Maximum load			
Weight	Type	Mfg.	C.O.L.	Type	Weight	Velocity	Weight	Velocity	Weight	Velocity	
[g]	[grs]		[mm]		[g]	[grs]	[g]	[grs]	[g]	[m/s]	
7.5	115	HP-XTP	Hornady	31.5	N320	0.33	5.1	362	<b>0.38</b>	<b>5.9</b>	<b>402</b>
					N340	0.39	6.0	381	<b>0.45</b>	<b>6.9</b>	<b>426</b>
					3N37	0.42	6.5	385	<b>0.51</b>	<b>7.9</b>	<b>436</b>
					N350	0.36	5.5	357	<b>0.46</b>	<b>7.1</b>	<b>415</b>
7.5	115	FMJ	Sierra	32.4	N350	0.51	7.9	414	<b>0.59</b>	<b>9.1</b>	<b>463</b>
					3N37	0.48	7.5	395	<b>0.54</b>	<b>8.4</b>	<b>443</b>
7.5	115	RN	Rainier	31.5	N320	0.31	4.8	357	<b>0.37</b>	<b>5.7</b>	<b>394</b>
					N340	0.39	6.0	382	<b>0.45</b>	<b>7.0</b>	<b>426</b>
					N350	0.43	6.6	388	<b>0.52</b>	<b>7.9</b>	<b>438</b>
					3N37	0.44	6.9	390	<b>0.51</b>	<b>7.9</b>	<b>432</b>
8.0	124	FMJ-FP	Hornady	32.0	N340	0.39	6.0	368	<b>0.46</b>	<b>7.1</b>	<b>413</b>
					3N37	0.46	7.1	374	<b>0.50</b>	<b>7.7</b>	<b>401</b>
					N350	0.41	6.4	366	<b>0.49</b>	<b>7.5</b>	<b>411</b>
					3N38	0.52	8.0	388	<b>0.60</b>	<b>9.3</b>	<b>446</b>
					N105	0.64	10.0	429	<b>0.71</b>	<b>10.9</b>	<b>486</b>
					N340	0.35	5.4	367	<b>0.41</b>	<b>6.4</b>	<b>405</b>
8.0	124	LSWC	Intercast	32.0	N350	0.39	6.0	371	<b>0.46</b>	<b>7.1</b>	<b>415</b>
					3N37	0.41	6.3	377	<b>0.48</b>	<b>7.4</b>	<b>417</b>
					N340	0.36	5.5	349	<b>0.41</b>	<b>6.3</b>	<b>384</b>
8.4	130	FMJ	Sierra	32.0	3N37	0.41	6.3	360	<b>0.47</b>	<b>7.3</b>	<b>399</b>
					3N38	0.54	8.3	387	<b>0.58</b>	<b>9.0</b>	<b>424</b>
					N105	0.60	9.3	402	<b>0.65</b>	<b>10.1</b>	<b>444</b>
					N340	0.35	5.4	344	<b>0.40</b>	<b>6.2</b>	<b>375</b>
8.4	130	RN	Rainier	32.0	N350	0.38	5.9	347	<b>0.45</b>	<b>6.9</b>	<b>388</b>
					3N37	0.41	6.3	355	<b>0.47</b>	<b>7.2</b>	<b>392</b>
					N340	0.28	4.3	315	<b>0.33</b>	<b>5.2</b>	<b>350</b>
9.4	145	LRN	Intercast	32.0	3N37	0.36	5.5	329	<b>0.41</b>	<b>6.3</b>	<b>368</b>
					N350	0.33	5.1	319	<b>0.39</b>	<b>6.0</b>	<b>358</b>
					N340	0.33	5.1	315	<b>0.38</b>	<b>5.9</b>	<b>354</b>
9.5	147	HP/XTP	Hornady	32.0	3N37	0.38	5.9	334	<b>0.44</b>	<b>6.8</b>	<b>372</b>
					N350	0.37	5.7	327	<b>0.42</b>	<b>6.5</b>	<b>364</b>
					3N38	0.50	7.7	366	<b>0.52</b>	<b>8.0</b>	<b>373</b>
					N105	0.51	7.8	360	<b>0.55</b>	<b>8.4</b>	<b>394</b>
					N340	0.32	5.0	321	<b>0.37</b>	<b>5.7</b>	<b>348</b>
9.5	147	RN	Rainier	32.0	N350	0.34	5.3	307	<b>0.40</b>	<b>6.1</b>	<b>345</b>
					3N37	0.36	5.5	316	<b>0.41</b>	<b>6.3</b>	<b>349</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

# .38 Super Lapua

Test barrel: 140 mm, 1 in 16" twist  
Primers: Small Pistol  
Cases: LAPUA, trim-to length 22.70 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.		C.O.L.	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]	[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
7.5	115	FMJ	LAPUA	31.5	N340	0.36	5.6	363	<b>0.41</b>	<b>6.3</b>	<b>432</b>
					3N37	0.44	6.8	383	<b>0.48</b>	<b>7.4</b>	<b>434</b>
					3N38	0.56	8.6	413	<b>0.63</b>	<b>9.7</b>	<b>458</b>
8.0	124	FMJ	LAPUA	32.0	N340	0.36	5.6	361	<b>0.40</b>	<b>6.2</b>	<b>405</b>
					3N37	0.44	6.8	382	<b>0.47</b>	<b>7.3</b>	<b>410</b>
					3N38	0.54	8.3	386	<b>0.59</b>	<b>9.1</b>	<b>436</b>
8.4	130	FMJ	Sierra	32.0	N340	0.34	5.2	356	<b>0.39</b>	<b>6.0</b>	<b>388</b>
					3N37	0.42	6.5	364	<b>0.46</b>	<b>7.1</b>	<b>399</b>
					3N38	0.50	7.7	380	<b>0.57</b>	<b>8.8</b>	<b>433</b>

# .38 Special

Test barrel: 170 mm, 1 in 18" twist  
Primers: Small Pistol  
Cases: Sako, trim-to length 29.10 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.		C.O.L.	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]	[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
7.1	110	HP/XTP	Homady	36.5	N320	0.37	5.7	362	<b>0.41</b>	<b>6.3</b>	<b>403</b>
					N340	0.42	6.5	363	<b>0.46</b>	<b>7.1</b>	<b>400</b>
					3N37	0.50	7.7	373	<b>0.55</b>	<b>8.4</b>	<b>414</b>
					N350	0.46	7.1	374	<b>0.52</b>	<b>8.0</b>	<b>412</b>
8.0	124	LSWC	Intercast	36.5	N320	0.31	4.8	329	<b>0.35</b>	<b>5.4</b>	<b>368</b>
					N340	0.39	6.0	343	<b>0.43</b>	<b>6.6</b>	<b>381</b>
					3N37	0.43	6.6	346	<b>0.47</b>	<b>7.3</b>	<b>380</b>
					N350	0.41	6.4	351	<b>0.46</b>	<b>7.2</b>	<b>382</b>
8.1	125	FP/XTP	Homady	36.5	N320	0.34	5.3	318	<b>0.38</b>	<b>5.9</b>	<b>356</b>
					N340	0.40	6.2	336	<b>0.45</b>	<b>6.9</b>	<b>373</b>
					3N37	0.46	7.2	340	<b>0.50</b>	<b>7.7</b>	<b>383</b>
					N350	0.45	7.0	345	<b>0.51</b>	<b>7.9</b>	<b>390</b>
8.1	125	FP	Rainier	36.5	N320	0.31	4.7	310	<b>0.35</b>	<b>5.4</b>	<b>345</b>
					N340	0.37	5.7	325	<b>0.43</b>	<b>6.6</b>	<b>364</b>
					N350	0.41	6.3	326	<b>0.47</b>	<b>7.2</b>	<b>370</b>
					3N37	0.43	6.6	333	<b>0.49</b>	<b>7.5</b>	<b>379</b>
9.1	140	HP	Speer	36.5	N320	0.32	5.0	291	<b>0.36</b>	<b>5.6</b>	<b>338</b>
					N340	0.38	5.8	299	<b>0.42</b>	<b>6.4</b>	<b>347</b>
					3N37	0.43	6.6	308	<b>0.48</b>	<b>7.4</b>	<b>360</b>
					N350	0.42	6.4	306	<b>0.46</b>	<b>7.1</b>	<b>354</b>
9.4	145	LSWC	Intercast	37.5	N320	0.27	4.1	286	<b>0.31</b>	<b>4.7</b>	<b>318</b>
					N340	0.35	5.3	315	<b>0.39</b>	<b>6.0</b>	<b>356</b>
					3N37	0.37	5.6	305	<b>0.40</b>	<b>6.2</b>	<b>342</b>
					N350	0.38	5.8	318	<b>0.44</b>	<b>6.7</b>	<b>363</b>

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

## .38 Special

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]
9.5	147	JHP	Speer	35.0	N340	0.32	5.0	281	<b>0.37</b>	<b>5.7</b>	<b>321</b>
					3N37	0.37	5.7	284	<b>0.41</b>	<b>6.3</b>	<b>326</b>
					N350	0.36	5.6	284	<b>0.40</b>	<b>6.2</b>	<b>322</b>
9.6	148	LWC	Sako	30.0	N320	0.21	3.2	250	<b>0.24</b>	<b>3.7</b>	<b>277</b>
					N330	0.23	3.6	256	<b>0.26</b>	<b>4.1</b>	<b>290</b>
					N340	0.25	3.9	263	<b>0.28</b>	<b>4.4</b>	<b>294</b>
					N350	0.28	4.3	272	<b>0.31</b>	<b>4.8</b>	<b>307</b>
					N340	0.34	5.2	267	<b>0.38</b>	<b>5.9</b>	<b>319</b>
					3N37	0.40	6.1	279	<b>0.44</b>	<b>6.8</b>	<b>320</b>
					N350	0.38	5.9	282	<b>0.43</b>	<b>6.7</b>	<b>325</b>
10.2	158	FP	Rainier	37.5	N320	0.28	4.3	257	<b>0.33</b>	<b>5.1</b>	<b>298</b>
					N340	0.34	5.3	268	<b>0.39</b>	<b>6.1</b>	<b>311</b>
					N350	0.38	5.9	281	<b>0.43</b>	<b>6.7</b>	<b>321</b>
					3N37	0.39	6.1	282	<b>0.44</b>	<b>6.9</b>	<b>326</b>
10.4	158	LFN	Intercast	37.5	N340	0.35	5.4	315	<b>0.39</b>	<b>6.0</b>	<b>351</b>
					3N37	0.37	5.7	298	<b>0.42</b>	<b>6.5</b>	<b>340</b>
					N350	0.37	5.7	309	<b>0.41</b>	<b>6.3</b>	<b>340</b>

## .357 Magnum

Test barrel: 175 mm, 1 in 18<sup>1</sup>/<sub>2</sub>" twist

Primers: Small Rifle

Cases: Remington, trim-to length 32.60 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]
7.1	110	HP/XTP	Hornady	40.0	N310	0.40	6.2	395	<b>0.44</b>	<b>6.7</b>	<b>417</b>
					N320	0.48	7.4	424	<b>0.52</b>	<b>8.0</b>	<b>449</b>
					N340	0.55	8.5	444	<b>0.61</b>	<b>9.4</b>	<b>481</b>
					3N37	0.61	9.5	468	<b>0.69</b>	<b>10.7</b>	<b>502</b>
					N350	0.64	9.9	472	<b>0.70</b>	<b>10.8</b>	<b>502</b>
					N110	1.20	18.5	523	<b>1.30</b>	<b>20.1</b>	<b>582</b>
8.0	124	LSWC	Intercast	41.0*)	N340	0.51	7.9	419	<b>0.57</b>	<b>8.8</b>	<b>448</b>
					N350	0.54	8.3	423	<b>0.60</b>	<b>9.3</b>	<b>451</b>
					N110	1.02	15.7	471	<b>1.13</b>	<b>17.4</b>	<b>518</b>
8.1	125	FP/XTP	Hornady	40.0	N310	0.36	5.5	346	<b>0.40</b>	<b>6.1</b>	<b>376</b>
					N320	0.40	6.2	375	<b>0.46</b>	<b>7.1</b>	<b>405</b>
					N340	0.51	7.8	412	<b>0.57</b>	<b>8.8</b>	<b>446</b>
					N350	0.57	8.7	431	<b>0.63</b>	<b>9.7</b>	<b>461</b>
					N110	1.09	16.8	488	<b>1.19</b>	<b>18.4</b>	<b>540</b>

\*) The CIP maximum cartridge overall length is exceeded.

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

# .357 Magnum

		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]
<b>9.1</b>	<b>140</b>	HP	Speer	40.0	N340	0.49	7.6	381	<b>0.54</b>	<b>8.3</b>	<b>409</b>
					3N37	0.54	8.3	390	<b>0.60</b>	<b>9.3</b>	<b>422</b>
					N350	0.53	8.2	390	<b>0.59</b>	<b>9.1</b>	<b>421</b>
					N110	1.02	15.7	457	<b>1.11</b>	<b>17.1</b>	<b>502</b>
<b>9.4</b>	<b>145</b>	LSWC	Intercast	41.0*)	N320	0.38	5.8	358	<b>0.42</b>	<b>6.4</b>	<b>380</b>
					N340	0.43	6.6	377	<b>0.48</b>	<b>7.4</b>	<b>402</b>
					3N37	0.49	7.5	387	<b>0.55</b>	<b>8.5</b>	<b>417</b>
					N350	0.44	6.8	375	<b>0.52</b>	<b>8.1</b>	<b>410</b>
					N110	0.91	14.0	450	<b>0.99</b>	<b>15.3</b>	<b>485</b>
					N320	0.37	5.7	312	<b>0.41</b>	<b>6.3</b>	<b>340</b>
<b>10.2</b>	<b>158</b>	HP	Speer	40.0	N340	0.44	6.7	340	<b>0.48</b>	<b>7.4</b>	<b>365</b>
					3N37	0.48	7.4	351	<b>0.54</b>	<b>8.3</b>	<b>382</b>
					N350	0.49	7.6	366	<b>0.55</b>	<b>8.5</b>	<b>389</b>
					N105	0.71	10.9	402	<b>0.77</b>	<b>11.9</b>	<b>432</b>
<b>10.2</b>	<b>158</b>	FP/XTP	Hornady	40.0	N110	0.91	14.1	417	<b>0.99</b>	<b>15.3</b>	<b>458</b>
<b>10.4</b>	<b>160</b>	LFN	Intercast	40.0	N340	0.41	6.3	360	<b>0.46</b>	<b>7.1</b>	<b>379</b>
					3N37	0.47	7.3	358	<b>0.52</b>	<b>8.0</b>	<b>388</b>
					N350	0.43	6.6	363	<b>0.49</b>	<b>7.6</b>	<b>387</b>
					N110	0.85	13.2	428	<b>0.93</b>	<b>14.4</b>	<b>462</b>
					N340	0.38	5.8	283	<b>0.42</b>	<b>6.4</b>	<b>301</b>
					3N37	0.40	6.2	281	<b>0.46</b>	<b>7.1</b>	<b>313</b>
<b>11.7</b>	<b>180</b>	TERA	LAPUA	42.6*)	N350	0.39	6.0	273	<b>0.45</b>	<b>7.0</b>	<b>310</b>
					N110	0.77	11.9	360	<b>0.83</b>	<b>12.8</b>	<b>397</b>
					N340	0.41	6.3	296	<b>0.46</b>	<b>7.1</b>	<b>326</b>
					3N37	0.45	7.0	309	<b>0.51</b>	<b>7.9</b>	<b>341</b>
<b>11.7</b>	<b>180</b>	TMJ	Speer	42.6*)	N350	0.42	6.4	293	<b>0.48</b>	<b>7.4</b>	<b>331</b>
					N105	0.58	8.9	352	<b>0.66</b>	<b>10.3</b>	<b>384</b>
					N110	0.82	12.7	382	<b>0.91</b>	<b>14.0</b>	<b>425</b>
					3N37	0.41	6.4	272	<b>0.47</b>	<b>7.2</b>	<b>302</b>
<b>13.0</b>	<b>200</b>	TMJ	Speer	43.1*)	N350	0.40	6.2	255	<b>0.46</b>	<b>7.1</b>	<b>295</b>
					N105	0.55	8.4	311	<b>0.61</b>	<b>9.4</b>	<b>342</b>
					N110	0.74	11.4	337	<b>0.80</b>	<b>12.4</b>	<b>367</b>
					N340	0.41	6.4	272	<b>0.47</b>	<b>7.2</b>	<b>302</b>

\*) The CIP maximum cartridge overall length is exceeded.

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

# .357 Remington Maximum

Test barrel: 300 mm, 1 in 18<sup>1</sup>/<sub>2</sub>" twist  
Primers: Small Rifle  
Cases: Remington, trim-to length 40.60 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]
<b>10.2</b>	<b>158</b>	FP/XTP	Hornady	48.0	3N37	0.66	10.1	439	<b>0.73</b>	<b>11.3</b>	<b>476</b>
					N350	0.56	8.6	409	<b>0.70</b>	<b>10.7</b>	<b>466</b>
					N105	0.85	13.1	485	<b>1.02</b>	<b>15.7</b>	<b>549</b>
					N110	1.14	17.5	529	<b>1.26</b>	<b>19.4</b>	<b>575</b>
<b>10.2</b>	<b>158</b>	FP	Rainier	48.0	N350	0.63	9.7	399	<b>0.77</b>	<b>11.8</b>	<b>467</b>
					3N37	0.62	9.5	409	<b>0.74</b>	<b>11.4</b>	<b>469</b>
					N105	0.86	13.3	490	<b>1.04</b>	<b>16.0</b>	<b>551</b>
					N110	1.21	18.6	530	<b>1.31</b>	<b>20.2</b>	<b>578</b>
<b>10.4</b>	<b>160</b>	LFN	Intercast	48.0	3N37	0.59	9.1	444	<b>0.71</b>	<b>10.9</b>	<b>479</b>
					N350	0.62	9.5	440	<b>0.69</b>	<b>10.6</b>	<b>471</b>
					N105	0.87	13.4	517	<b>1.05</b>	<b>16.2</b>	<b>572</b>
<b>11.7</b>	<b>180</b>	Silhoutte	Nosler	48.1	N105	0.79	12.2	443	<b>0.92</b>	<b>14.2</b>	<b>499</b>
					N110	1.00	15.5	475	<b>1.12</b>	<b>17.2</b>	<b>517</b>
					N120	1.32	20.4	489	<b>1.45</b>	<b>22.4</b>	<b>534</b>
<b>13.0</b>	<b>200</b>	TMJ	Speer	50.8*)	N110	0.92	14.2	415	<b>1.04</b>	<b>16.0</b>	<b>457</b>
					N120	1.23	18.9	426	<b>1.35</b>	<b>20.8</b>	<b>479</b>

\*) The CIP maximum cartridge overall length is exceeded.

# .40 S.&W.

Test barrel: 140 mm, 1 in 16" twist  
Primers: Small Pistol  
Cases: Remington, trim-to length 21.40 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]
<b>10.0</b>	<b>155</b>	HP-XTP	Hornady	28.6	N320	0.34	5.2	337	<b>0.38</b>	<b>5.9</b>	<b>363</b>
					N330	0.39	6.0	348	<b>0.43</b>	<b>6.7</b>	<b>376</b>
					N340	0.39	6.0	345	<b>0.45</b>	<b>6.9</b>	<b>381</b>
					3N37	0.47	7.3	357	<b>0.53</b>	<b>8.1</b>	<b>392</b>
					N350	0.43	6.6	351	<b>0.50</b>	<b>7.6</b>	<b>385</b>
<b>10.0</b>	<b>155</b>	FP	Rainier	28.6	N320	0.34	5.3	331	<b>0.38</b>	<b>5.9</b>	<b>357</b>
					N330	0.39	6.0	344	<b>0.43</b>	<b>6.7</b>	<b>373</b>
					N340	0.41	6.4	352	<b>0.47</b>	<b>7.3</b>	<b>389</b>
					N350	0.46	7.2	357	<b>0.52</b>	<b>8.1</b>	<b>395</b>
					3N37	0.49	7.5	359	<b>0.55</b>	<b>8.5</b>	<b>394</b>
<b>11.0</b>	<b>170</b>	HP	Hornady	28.6	N340	0.34	5.3	313	<b>0.40</b>	<b>6.1</b>	<b>346</b>
					3N37	0.39	6.0	322	<b>0.45</b>	<b>7.0</b>	<b>355</b>
					N350	0.38	5.8	322	<b>0.44</b>	<b>6.8</b>	<b>354</b>

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

## .40 S.&W.

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	HP	Speer	28.6	N340	0.35	5.5	305	<b>0.40</b>	<b>6.1</b>	<b>338</b>
					3N37	0.38	5.8	303	<b>0.44</b>	<b>6.8</b>	<b>340</b>
					N350	0.38	5.9	319	<b>0.44</b>	<b>6.7</b>	<b>348</b>
13.0	200	TMJ	Speer	28.6	N340	0.30	4.7	267	<b>0.35</b>	<b>5.4</b>	<b>298</b>
					3N37	0.33	5.1	265	<b>0.39</b>	<b>6.0</b>	<b>301</b>
					N350	0.34	5.3	272	<b>0.39</b>	<b>6.0</b>	<b>302</b>
					N105	0.49	7.5	321	<b>0.52</b>	<b>8.0</b>	<b>345</b>

## 10mm AUTO

Test barrel: 140 mm, 1 in 16" twist

Primers: Large Pistol

Cases: Winchester, trim-to length 25.00 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]
10.0	155	HP-XTP	Hornady	31.9	N340	0.43	6.7	355	<b>0.49</b>	<b>7.6</b>	<b>392</b>
					3N37	0.47	7.2	359	<b>0.56</b>	<b>8.6</b>	<b>401</b>
					N350	0.46	7.1	359	<b>0.55</b>	<b>8.4</b>	<b>401</b>
10.0	155	FP	Rainier	31.9	N340	0.47	7.2	369	<b>0.52</b>	<b>8.0</b>	<b>403</b>
					N350	0.52	8.0	379	<b>0.58</b>	<b>8.9</b>	<b>420</b>
					3N37	0.53	8.2	373	<b>0.58</b>	<b>9.0</b>	<b>410</b>
11.7	180	HP	Speer	31.9	N340	0.39	6.0	312	<b>0.44</b>	<b>6.9</b>	<b>352</b>
					3N37	0.43	6.6	333	<b>0.50</b>	<b>7.8</b>	<b>366</b>
					N350	0.38	5.9	328	<b>0.47</b>	<b>7.2</b>	<b>361</b>
13.0	200	FMJ/FP	Hornady	31.9	N105	0.60	9.3	372	<b>0.68</b>	<b>10.5</b>	<b>408</b>
					N340	0.32	5.0	267	<b>0.37</b>	<b>5.7</b>	<b>309</b>
					3N37	0.38	5.9	291	<b>0.44</b>	<b>6.8</b>	<b>327</b>
					N350	0.34	5.3	284	<b>0.41</b>	<b>6.3</b>	<b>319</b>
					N105	0.50	7.7	325	<b>0.56</b>	<b>8.6</b>	<b>352</b>

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



# .41 Remington Magnum

Test barrel: 150 mm, 1 in 18¾" twist  
 Primers: Large Pistol  
 Cases: W-W Super, trim-to length 32.65 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]	
11.0	170	JHC	Sierra	40.1	N350	0.72	11.1	417	<b>0.84</b>	<b>13.0</b>	<b>465</b>	
						N105	0.99	15.3	469	<b>1.13</b>	<b>17.5</b>	<b>515</b>
						N110	1.41	21.7	504	<b>1.53</b>	<b>23.5</b>	<b>547</b>
13.6	210	HP/XTP	Hornady	40.1	N350	0.67	10.4	372	<b>0.76</b>	<b>11.8</b>	<b>408</b>	
					N105	0.84	13.0	405	<b>0.98</b>	<b>15.1</b>	<b>448</b>	
					N110	1.20	18.5	436	<b>1.31</b>	<b>20.3</b>	<b>476</b>	

# .44 S.&W. Special

Test barrel: 150 mm, 1 in 18" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 29.30 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]
11.7	180	HP-XTP	Hornady	37.3	N320	0.44	6.8	285	<b>0.49</b>	<b>7.5</b>	<b>315</b>
					N330	0.50	7.7	308	<b>0.56</b>	<b>8.6</b>	<b>338</b>
					N340	0.57	8.8	319	<b>0.62</b>	<b>9.5</b>	<b>349</b>
					N350	0.64	9.9	318	<b>0.68</b>	<b>10.5</b>	<b>350</b>
13.0	200	HP-XTP	Hornady	37.3	N320	0.41	6.4	270	<b>0.45</b>	<b>7.0</b>	<b>294</b>
					N330	0.50	7.7	287	<b>0.55</b>	<b>8.5</b>	<b>315</b>
					N340	0.54	8.3	293	<b>0.59</b>	<b>9.1</b>	<b>325</b>
					N350	0.59	9.1	296	<b>0.64</b>	<b>9.9</b>	<b>329</b>
14.3	220	FPJ-Match	Sierra	37.3	N320	0.34	5.2	221	<b>0.39</b>	<b>5.9</b>	<b>255</b>
					N330	0.40	6.2	232	<b>0.46</b>	<b>7.0</b>	<b>271</b>
					N340	0.43	6.6	248	<b>0.48</b>	<b>7.4</b>	<b>278</b>
					N350	0.50	7.7	254	<b>0.56</b>	<b>8.6</b>	<b>289</b>
15.6	240	JTC-Sil	Hornady	37.6	N320	0.31	4.9	193	<b>0.36</b>	<b>5.6</b>	<b>223</b>
					N330	0.35	5.5	206	<b>0.40</b>	<b>6.2</b>	<b>234</b>
					N340	0.41	6.3	222	<b>0.46</b>	<b>7.1</b>	<b>252</b>
					N350	0.49	7.5	239	<b>0.53</b>	<b>8.2</b>	<b>271</b>
16.2	250	FPJ-Match	Sierra	37.3	N320	0.31	4.7	193	<b>0.36</b>	<b>5.5</b>	<b>226</b>
					N330	0.32	5.0	191	<b>0.39</b>	<b>6.0</b>	<b>228</b>
					N340	0.36	5.5	197	<b>0.42</b>	<b>6.5</b>	<b>237</b>
					N350	0.44	6.7	229	<b>0.49</b>	<b>7.6</b>	<b>260</b>
17.3	267	LFN	Intercast	39.1	N320	0.34	5.3	242	<b>0.39</b>	<b>6.0</b>	<b>262</b>
					N330	0.41	6.3	261	<b>0.45</b>	<b>7.0</b>	<b>281</b>
					N340	0.42	6.5	256	<b>0.46</b>	<b>7.1</b>	<b>278</b>
					N350	0.47	7.3	259	<b>0.52</b>	<b>8.0</b>	<b>282</b>

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

# .44 Remington Magnum

Test barrel: 175 mm, 1 in 20" twist

Primers: Large Pistol

Cases: Remington, trim-to length 32.40 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]		
<b>11.7</b>	<b>180</b>	HP-XTP	Hornady	40.7	N320	0.66	10.2	396	<b>0.76</b>	<b>11.7</b>	<b>434</b>
					N340	0.81	12.5	427	<b>0.91</b>	<b>14.0</b>	<b>469</b>
					N350	0.85	13.2	436	<b>0.98</b>	<b>15.2</b>	<b>478</b>
					N110	1.60	24.7	483	<b>1.70</b>	<b>26.2</b>	<b>514</b>
<b>13.0</b>	<b>200</b>	HP-XTP	Hornady	40.7	N320	0.62	9.6	371	<b>0.73</b>	<b>11.2</b>	<b>406</b>
					N340	0.73	11.3	400	<b>0.84</b>	<b>12.9</b>	<b>435</b>
					3N37	0.86	13.2	423	<b>0.97</b>	<b>15.0</b>	<b>459</b>
					N350	0.79	12.1	402	<b>0.94</b>	<b>14.5</b>	<b>450</b>
					N105	1.03	15.9	444	<b>1.24</b>	<b>19.2</b>	<b>497</b>
					N110	1.53	23.7	481	<b>1.70</b>	<b>26.2</b>	<b>527</b>
<b>14.3</b>	<b>220</b>	FPJ-Match	Sierra	40.7	N320	0.56	8.6	341	<b>0.67</b>	<b>10.3</b>	<b>373</b>
					N340	0.69	10.7	372	<b>0.79</b>	<b>12.2</b>	<b>403</b>
					N350	0.78	12.1	388	<b>0.95</b>	<b>14.6</b>	<b>436</b>
<b>15.6</b>	<b>240</b>	JTC-Sil	Hornady	40.7	N320	0.56	8.7	323	<b>0.63</b>	<b>9.7</b>	<b>352</b>
					N340	0.64	9.9	350	<b>0.74</b>	<b>11.4</b>	<b>378</b>
					3N37	0.75	11.6	361	<b>0.86</b>	<b>13.2</b>	<b>399</b>
					N350	0.75	11.6	366	<b>0.82</b>	<b>12.7</b>	<b>397</b>
					N105	0.90	13.9	392	<b>1.07</b>	<b>16.4</b>	<b>434</b>
					N110	1.28	19.8	422	<b>1.42</b>	<b>21.9</b>	<b>467</b>
<b>16.2</b>	<b>250</b>	FPJ-Match	Sierra	40.7	N320	0.52	8.1	303	<b>0.62</b>	<b>9.6</b>	<b>342</b>
					N340	0.62	9.6	331	<b>0.72</b>	<b>11.1</b>	<b>367</b>
					N350	0.71	11.0	356	<b>0.84</b>	<b>13.0</b>	<b>392</b>
<b>17.3</b>	<b>267</b>	LFN	Intercast	42.7*)	N340	0.66	10.1	350	<b>0.74</b>	<b>11.4</b>	<b>374</b>
					3N37	0.74	11.4	355	<b>0.85</b>	<b>13.1</b>	<b>389</b>
					N350	0.71	10.9	351	<b>0.82</b>	<b>12.6</b>	<b>382</b>
					N110	1.29	19.8	412	<b>1.40</b>	<b>21.7</b>	<b>447</b>
<b>19.4</b>	<b>300</b>	HP-XTP	Hornady	43.6	N340	0.60	9.2	297	<b>0.67</b>	<b>10.4</b>	<b>322</b>
					N350	0.65	10.1	305	<b>0.75</b>	<b>11.6</b>	<b>341</b>
					N110	1.17	18.1	371	<b>1.30</b>	<b>20.1</b>	<b>416</b>
<b>19.4</b>	<b>300</b>	JSP	Sierra	43.6	N340	0.59	9.1	288	<b>0.66</b>	<b>10.1</b>	<b>317</b>
					3N37	0.62	9.6	295	<b>0.72</b>	<b>11.1</b>	<b>330</b>
					N350	0.61	9.4	285	<b>0.71</b>	<b>10.9</b>	<b>324</b>
					N105	0.79	12.2	332	<b>0.89</b>	<b>13.7</b>	<b>366</b>
					N110	1.12	17.3	359	<b>1.23</b>	<b>18.9</b>	<b>395</b>

\*) The CIP maximum cartridge overall length is exceeded.

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

# .45 AUTO

Test barrel: 150 mm, 1 in 16" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 22.70 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.		C.O.L.	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]	[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
<b>10.0</b>	<b>154</b>	LSWC	Intercast	31.5	N320	0.39	5.9	320	<b>0.42</b>	<b>6.5</b>	<b>346</b>
					N340	0.50	7.7	349	<b>0.54</b>	<b>8.3</b>	<b>374</b>
<b>11.7</b>	<b>180</b>	LSWC	Intercast	31.6	N320	0.36	5.5	301	<b>0.40</b>	<b>6.1</b>	<b>326</b>
					N340	0.45	6.9	316	<b>0.49</b>	<b>7.5</b>	<b>342</b>
<b>13.0</b>	<b>200</b>	FN	Rainier	30.5	N320	0.38	5.9	296	<b>0.43</b>	<b>6.6</b>	<b>331</b>
					N340	0.48	7.4	309	<b>0.54</b>	<b>8.3</b>	<b>351</b>
					N350	0.58	9.0	331	<b>0.63</b>	<b>9.7</b>	<b>376</b>
<b>12.0</b>	<b>185</b>	TMJ-SWC	Speer	32.2	N320	0.37	5.7	283	<b>0.40</b>	<b>6.2</b>	<b>306</b>
					N340	0.47	7.2	308	<b>0.51</b>	<b>7.8</b>	<b>335</b>
<b>13.0</b>	<b>200</b>	LSWC	Intercast	31.5	N320	0.31	4.8	275	<b>0.34</b>	<b>5.2</b>	<b>296</b>
					N340	0.40	6.2	299	<b>0.44</b>	<b>6.7</b>	<b>321</b>
<b>13.0</b>	<b>200</b>	FMJ-CT	Hornady	31.5	N320	0.33	5.0	265	<b>0.36</b>	<b>5.5</b>	<b>287</b>
					N340	0.41	6.3	281	<b>0.45</b>	<b>6.9</b>	<b>305</b>
					N350	0.44	6.8	284	<b>0.48</b>	<b>7.5</b>	<b>308</b>
<b>14.9</b>	<b>230</b>	FMJ-RN	Hornady	32.0	N320	0.32	4.9	243	<b>0.34</b>	<b>5.3</b>	<b>263</b>
					N340	0.39	6.0	258	<b>0.42</b>	<b>6.5</b>	<b>283</b>
					N350	0.44	6.8	262	<b>0.48</b>	<b>7.3</b>	<b>285</b>

# .45 Colt

Test barrel: 150 mm, 1 in 16" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 32.50 mm

Bullet				Powder	Starting load			Maximum load			
Weight		Type	Mfg.		C.O.L.	Weight		Velocity	Weight		Velocity
[g]	[grs]			[mm]	[g]	[grs]	[m/s]	[g]	[grs]	[m/s]	
<b>11.7</b>	<b>180</b>	LSWC	Intercast	40.5	N320	0.55	8.5	341	<b>0.60</b>	<b>9.3</b>	<b>367</b>
					N330	0.66	10.2	362	<b>0.71</b>	<b>11.0</b>	<b>389</b>
					N340	0.69	10.6	362	<b>0.74</b>	<b>11.4</b>	<b>391</b>
					N350	0.75	11.6	363	<b>0.83</b>	<b>12.8</b>	<b>399</b>
<b>12.0</b>	<b>185</b>	FN	Rainier	40.5	N320	0.57	8.8	328	<b>0.62</b>	<b>9.6</b>	<b>358</b>
					N330	0.67	10.3	333	<b>0.73</b>	<b>11.3</b>	<b>367</b>
					N340	0.72	11.1	343	<b>0.78</b>	<b>12.0</b>	<b>383</b>
					N350	0.80	12.3	346	<b>0.88</b>	<b>13.6</b>	<b>389</b>
<b>12.0</b>	<b>185</b>	HP/XTP	Hornady	40.5	N320	0.57	8.8	334	<b>0.62</b>	<b>9.6</b>	<b>360</b>
					N340	0.71	11.0	342	<b>0.76</b>	<b>11.7</b>	<b>377</b>
					N350	0.80	12.3	346	<b>0.86</b>	<b>13.3</b>	<b>382</b>
<b>13.0</b>	<b>200</b>	FMJ-CT	Hornady	40.5	N320	0.52	8.0	317	<b>0.58</b>	<b>9.0</b>	<b>342</b>
<b>13.0</b>	<b>200</b>	LSWC	Hornady	40.5	N320	0.56	8.6	326	<b>0.61</b>	<b>9.4</b>	<b>347</b>
					N340	0.70	10.8	341	<b>0.75</b>	<b>11.6</b>	<b>364</b>

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

## .45 Colt

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]
<b>13.0</b>	<b>200</b>	FMJ-CT	Hornady	40.5	N320	0.52	8.0	317	<b>0.58</b>	<b>9.0</b>	<b>342</b>
<b>13.0</b>	<b>200</b>	LSWC	Hornady	40.5	N320	0.56	8.6	326	<b>0.61</b>	<b>9.4</b>	<b>347</b>
					N340	0.70	10.8	341	<b>0.75</b>	<b>11.6</b>	<b>364</b>
<b>14.9</b>	<b>230</b>	FMJ-Match	Sierra	40.5	N320	0.49	7.6	286	<b>0.54</b>	<b>8.3</b>	<b>306</b>
					N340	0.63	9.7	301	<b>0.68</b>	<b>10.5</b>	<b>330</b>
<b>16.2</b>	<b>250</b>	HP/XTP	Hornady	40.5	N320	0.47	7.3	257	<b>0.51</b>	<b>7.9</b>	<b>280</b>
					N340	0.60	9.3	281	<b>0.64</b>	<b>9.9</b>	<b>307</b>
					N350	0.69	10.6	297	<b>0.72</b>	<b>11.1</b>	<b>321</b>
					N105	0.91	14.0	296	<b>0.97</b>	<b>15.0</b>	<b>344</b>

## .45 Winchester Magnum

Test barrel: 300 mm, 1 in 16" twist

Primers: Winchester WLP

Cases: Winchester, trim-to length 30.30

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]
<b>12.0</b>	<b>185</b>	HP/XTP	Hornady	38.5	3N37	0.97	15.0	520	<b>1.09</b>	<b>16.8</b>	<b>547</b>
					N350	0.90	13.9	481	<b>1.08</b>	<b>16.7</b>	<b>542</b>
					N105	1.23	19.0	549	<b>1.43</b>	<b>22.1</b>	<b>602</b>
<b>13.0</b>	<b>200</b>	TMJ-SWC	Speer	38.5	3N37	0.95	14.7	500	<b>1.04</b>	<b>16.0</b>	<b>526</b>
<b>13.0</b>	<b>200</b>	FMJ-CT	Hornady	39.5	N105	1.15	17.7	507	<b>1.31</b>	<b>20.2</b>	<b>556</b>
<b>13.0</b>	<b>200</b>	TMJ-SWC	Speer	38.5	N110	1.56	24.1	551	<b>1.71</b>	<b>26.4</b>	<b>598</b>
<b>14.9</b>	<b>230</b>	FMJ-RN	Hornady	39.5	3N37	0.87	13.4	430	<b>0.97</b>	<b>15.0</b>	<b>471</b>
					N110	1.48	22.8	513	<b>1.62</b>	<b>25.0</b>	<b>550</b>
<b>16.2</b>	<b>250</b>	HP/XTP	Hornady	38.2	N350	0.71	11.0	341	<b>0.84</b>	<b>13.0</b>	<b>405</b>
					3N37	0.79	12.2	377	<b>0.87</b>	<b>13.4</b>	<b>424</b>
					N105	0.96	14.8	412	<b>1.09</b>	<b>16.8</b>	<b>450</b>
					N110	1.28	19.8	461	<b>1.45</b>	<b>22.4</b>	<b>500</b>

**BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!**

LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

## .454 Casull

Test barrel: 190 mm, 1 in 24" twist  
Primers: Small Rifle  
Cases: Starline, trim-to length 35.05

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]
<b>12.0</b>	<b>185</b>	HP/XTP	Hornady	41.7*	3N37	1.14	17.6	534	<b>1.36</b>	<b>21.0</b>	<b>598</b>
					N350	1.18	18.2	540	<b>1.39</b>	<b>21.4</b>	<b>597</b>
					N105	1.72	26.6	610	<b>1.90</b>	<b>29.3</b>	<b>658</b>
<b>14.6</b>	<b>225</b>	JHP	Speer	42.7	3N37	1.09	16.8	475	<b>1.27</b>	<b>19.6</b>	<b>524</b>
					N105	1.59	24.6	538	<b>1.73</b>	<b>26.7</b>	<b>583</b>
					N110	2.00	30.8	568	<b>2.17</b>	<b>33.5</b>	<b>611</b>
<b>16.2</b>	<b>250</b>	HP/XTP	Hornady	42.8	3N37	1.01	15.6	438	<b>1.18</b>	<b>18.2</b>	<b>488</b>
					N105	1.39	21.4	483	<b>1.57</b>	<b>24.3</b>	<b>538</b>
					N110	1.82	28.1	524	<b>1.99</b>	<b>30.7</b>	<b>571</b>
<b>19.4</b>	<b>300</b>	UHP	Speer	44.5	3N37	0.99	15.2	395	<b>1.10</b>	<b>17.0</b>	<b>431</b>
					N105	1.28	19.7	429	<b>1.49</b>	<b>23.0</b>	<b>484</b>
					N110	1.71	26.3	474	<b>1.86</b>	<b>28.7</b>	<b>514</b>

\*) The bullet crimp is over the ogive.

## .50 AE

Test barrel: 150 mm, 1 in 19" twist  
Primers: Large Pistol  
Cases: Speer, trim-to length 32.40

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]
<b>19.4</b>	<b>300</b>	JHP	IMI	40.0	N105	1.26	19.5	395	<b>1.38</b>	<b>21.3</b>	<b>437</b>
					N110	1.64	25.3	396	<b>1.86</b>	<b>28.6</b>	<b>457</b>
					N120	2.11	32.5	362	<b>2.33</b>	<b>36.0</b>	<b>417</b>
<b>21.1</b>	<b>325</b>	UHP	Speer	40.0	N105	1.15	17.7	356	<b>1.26</b>	<b>19.5</b>	<b>407</b>
					N110	1.56	24.1	387	<b>1.75</b>	<b>27.0</b>	<b>445</b>
					N120	1.99	30.7	347	<b>2.23</b>	<b>34.5</b>	<b>408</b>

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



# Vihtavuori Smokeless Loads for Cowboy Action Shooting

## About the Data

These loads are developed to give the velocities required for the cowboy action shooting using revolvers with lead bullets. The maximum load is determined by the velocity limit about 300 m/s, or by the maximum pressure limit according to the CIP October 1, 1992 rules. The bold text in the tables indicate the maximum load according to CIP pressure level. **The maximum loads must never be exceeded.**

All the listed loads are intended to be used in modern firearms, which are according to the SAAMI requirements. Please use a competent gunsmith to evaluate that the condition of your gun is adequate to be used with the pressures indicated in the tables. The starting loads are the lowest charges which appeared to give clean burning, i.e. no unburned residues in the barrel or in the case, in our test shooting. This limit may, however vary according to the revolver used.

There are some special features, which must be considered, when using reduced loads like the ones presented in the tables below. The same facts are equally valid always when using any smokeless powder in such loads.

### 1) Double charges

Some of these loads are so small that throwing the load twice in the same case is possible because of the large case volume. Doubling the charge accidentally causes most probably truly lethal chamber pressures. Therefore, **it is a must for everyone using this data to check visually every single load for the double charge before seating the bullet.**

### 2) Free space in the case

When using charges which leave large amount of free space in the case, the shooting characteristics may vary largely depending on where the powder is located in the case. If the powder lies totally in the bottom of the case (i.e. in the end where primer is), the muzzle velocity and especially the maximum pressure become much higher. The maximum pressure may even be doubled when same powder charge is moved from the bullet end to the primer end of the case. This can

simply be demonstrated by shaking the revolver barrel upwards or barrel downwards just before turning it smoothly in horizontal position, aiming and shooting. Also the recoil may transfer the powder in either end of the case. This is sometimes seen as a velocity change between the first shot and the following shots.

The shot to shot deviations in velocity and pressure are normally increased when using load which leaves the cases half empty. For this reason such loads are not recommended for target loads. The data below is tested in a way that the powder is as much as possible in the primer side before firing, and therefore, the pressures and the velocities represent the maximum values which were obtained using our test equipment and cartridge components indicated in the table.

### 3) Risk for underload detonation

This risk is always present when using highly reduced loads of any smokeless powder. The large free space in the case may generate a pressure wave which can cause, in the worst case, powder to burn as a shock wave, i.e. to detonate, instead of normal fast burning process. The extremely sharp pressure peaks involved in detonation can destroy the weapon and may lead to serious injury.

All these loads given here are extensively pressure tested and no signs of underload detonation were found. We strongly recommend everyone to follow strictly these tables to minimize the risk for underload detonation.

## Warnings

Smokeless powder differs considerably in its burning characteristics from common "black powder". Black powder burns essentially at the same rate in the open (unconfined) as when in a gun. The burning rate of smokeless powder increases with increasing pressure. If burning smokeless powder is confined, gas pressure will rise and eventually can cause the container or chamber to burst. A slight increase in smokeless powder charge after maximum load causes sharp increase in maximum pressure in the chamber. **Never exceed the maximum loads.**

## .38 Special

Test barrel: 125mm, 1 in18" twist

Primers: Small Pistol

Cases: Remington, trim-to length 29.1 mm

Bullet				Powder	Starting load			Maximum load		
Weight [g]	Weight [grs]	Type	Mfg.	Type	Weight [g]	Weight [grs]	Velocity [m/s]	Weight [g]	Weight [grs]	Velocity [m/s]
10.3	158	LSWC/HP	36.5	N320	0.21	3.3	230	0.25	3.8	256
				N330	0.23	3.6	240	0.27	4.1	269

## .357 Magnum

Test barrel: 150 mm, 1 in 18½" twist

Primers: Small Rifle

Cases: Remington, trim-to length 32.6 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]
<b>10.3</b>	<b>158</b>	LSWC/HP		40.0	N330	0.25	3.9	241	<b>0.32</b>	<b>5.0</b>	<b>304</b>
					N340	0.29	4.5	245	<b>0.38</b>	<b>5.9</b>	<b>320</b>

## .44 S.&W. Special

Test barrel: 165 mm, 1 in 18" twist

Primers: Large Pistol

Cases: Remington, trim-to length 29.3 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]
<b>15.6</b>	<b>240</b>	SWC/HP		39.1	N320	0.30	4.7	214	<b>0.38</b>	<b>5.9</b>	<b>260</b>
					N330	0.36	5.5	229	<b>0.41</b>	<b>6.3</b>	<b>270</b>
<b>17.3</b>	<b>267</b>	LFN		39.1	N320	0.25	3.8	193	<b>0.34</b>	<b>5.3</b>	<b>242</b>
					N330	0.32	4.9	216	<b>0.38</b>	<b>5.9</b>	<b>254</b>
					N340	0.43	6.6	261	<b>0.47</b>	<b>7.3</b>	<b>282</b>

## .44 Remington Magnum

Test barrel: 175 mm, 1 in 20" twist

Primers: Large Pistol

Cases: Remington, trim-to length 32.4 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]
<b>17.3</b>	<b>267</b>	LFN		40.0	N340	0.38	5.9	224	<b>0.49</b>	<b>7.5</b>	<b>288</b>

## .45 Colt

Test barrel: 6", 1 in 16" twist

Primers: Large Pistol

Cases: Remington, trim-to length 32.5 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]
<b>13.0</b>	<b>200</b>	RN		40.5	N320	0.44	6.8	259	<b>0.56</b>	<b>8.7</b>	<b>318</b>
					N330	0.52	8.0	267	<b>0.56</b>	<b>8.6</b>	<b>298</b>
<b>16.2</b>	<b>250</b>	RN		40.5	N320	0.36	5.6	229	<b>0.45</b>	<b>6.9</b>	<b>279</b>
					N330	0.41	6.3	238	<b>0.49</b>	<b>7.5</b>	<b>293</b>

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



# Unit Conversions

$$1 \text{ g} = 15.43 \text{ grains}$$

$$1 \text{ grain} = 0.0648 \text{ g}$$

$$1 \text{ MPa} = 145.036 \text{ psi}$$

$$1 \text{ psi} = 0.00689 \text{ MPa}$$

$$1 \text{ m/s} = 3.2808 \text{ fps}$$

$$1 \text{ fps} = 0.3048 \text{ m/s}$$

$$1 \text{ mm} = 0.03937 \text{ in.}$$

$$1 \text{ in.} = 25.4 \text{ mm}$$

$$1 \text{ m} = 1.0936 \text{ yds}$$

$$1 \text{ yd.} = 0.9144 \text{ m}$$

$$1 \text{ J} = 0.73757 \text{ ft. lbs}$$

$$1 \text{ ft. lbs} = 1.3558 \text{ J}$$



## Dear Customer,

The **Vihtavuori Powders** are available worldwide through our distributors listed below:

### Australia

D.W. Custer Pty. Ltd.  
P.O.B. 1023  
N.S.W. 1835 Auburn  
Australia  
Tel: +61-2-9749 9222  
Fax: +61-2-9749 9296  
custer@powerup.com.au  
www.custer.com.au

### Austria

Rohof GmbH  
Hermannsplatz 17, Postfach 21  
A-2560 Berndorf  
Austria  
Tel: +43-2672-82571  
Fax: +43-2672-827 673  
rohof@magnet.at

### Denmark

Guntex A/S  
Jaegervej 7  
DK-6900 Skjern  
Danmark  
Tel: +45-96-802000  
Fax: +45-96-802010  
www.guntex.dk

Leo Nielsen Trading A/S  
Klostermarken 5  
DK-9000 Aalborg  
Danmark  
Tel: +45 98 102909  
Fax: +45 98 102940  
lntrade@lntrade.dk

### Finland

Nordic Distribution Oy NorDis  
PL 5  
FIN-62101 Lapua  
Finland  
Tel: +358-6-4310 111  
Fax: +358-6-4310 295  
www.nammo.fi  
www.nordis-fi.com

### France

B.G.M  
15, Route de Meaux  
Le Bois - Fleur  
F-77410 Claye-Souilly  
France  
Tel: +33-1-60 26 13 07  
Fax: +33-1-60 26 14 77

### Great Britain

Tim Hannam  
Peckfield Lodge  
Great North Road  
South Milford, Leeds LS25 5LJ  
North Yorkshire  
England  
Tel: +44-1977-681 639  
Fax: -44-1977-684 272  
timhannam@hotmail.com

### Germany

FA Gustaf Jehn GmbH  
Postfach 1827  
D-59528 Lippstadt  
Deutschland  
Tel: +49 2941 29090  
Fax: +49 2941 23418  
gjechn2t-online.de  
www.jehn.de

### Iceland

Hlad Sf  
Bildshöfða 12  
112 Reykjavik  
Iceland  
Tel: +354-567 5333  
Fax: +354-567 5313  
hlad@isholf.is

### Italy

Armeria Bersaglio Mobile  
Via Zacchetti, 14  
42100 Reggio Emilia  
Italy  
Tel: +39-0522-518 344  
Fax: +39-0522-518 354  
info@bersagliomobile.com

### Japan

Gunsmith of Kunitomo Co. Ltd.  
Teramachi Bukoji Shimogyo  
Kyoto  
Japan  
Tel: +81-75-3514165  
Fax: +81-75-3517902  
kunigskj@po.globec.or.jp  
www.kunitomogs.co.jp

### Luxembourg

Armurerie Henry Freylinger  
Zone Industrielle & Commerciale  
L-3378 Livange  
Grand-Duche de Luxembourg  
Tel: +352-520 015  
Fax: +352-520 010

### Netherlands

Dutch Firearms Trading  
Box 23  
NL-7587 ZG De Lutte (OV)  
The Netherlands  
Tel: +31-541-552 555  
Fax: +31-541-552 550  
firearms@firearms.nl

### Norway

Magne Landrø A/S  
Solheimsveien 62 B  
N-1473 Lørenskog  
Norge  
Tel: +47-64-84 75 75  
Fax: +47-64-84 75 70  
www.landro.no

### Philippines

Stronghand Inc.  
74 A, Rocas Avenue  
Quezon City  
Metro Manila (1103)  
Philippines  
Tel: +63-2-373 2311  
Fax: +63-2-374 2476  
sales@stronghand.net  
www.stronghand.net

### South Africa

Kolskoot-Potshot  
P.O. Box 101  
Ferndale 2160  
South Africa  
Tel: +27-11-793 1136  
Fax: +27-11-792 4491  
Kolskoot@iafrika.com  
www.kolskoot-potshot.co.za

### Sweden

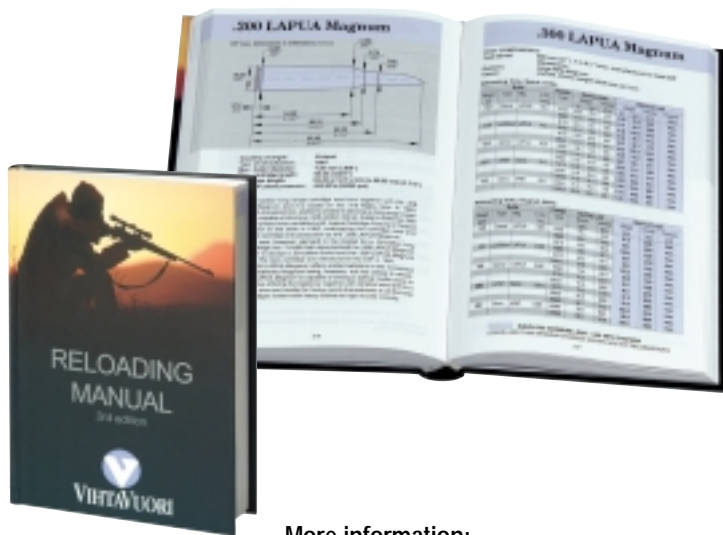
Winscan AB  
Box 4  
S-546 23, Karlsborg  
Sweden  
Tel: +46-505-18250  
Fax: +46-505-18257  
HansK@vanas.nammo.com

### Switzerland

Waffen Wildi AG  
Strengelbacherstrasse 11  
Postfach 73  
CH-4800 Zofingen  
Switzerland  
Tel: +41-62-752 86 31  
Fax: +41-62-751 41 82  
info@waffenwildi.ch  
www.waffenwildi.ch

### United States

Kaltron Pettibone Inc.  
1241 Ellis Street, Bensenville  
IL 60106  
U.S.A.  
Tel: +1-630-350 1116  
Fax: +1-630 350 1606  
kaltron@concentric.net  
jbolda@kaltron.com



More information:

**Vihtavuori Reloading Manual** ,  
3rd edition



# VIHTAVUORI

Customer service:  
Nammo Lapua Oy

P.O. BOX 5, FIN-63101 Lapua, Finland  
tel. +358 6 4310 111, fax. +358 6 4310 317

[www.vihtavuori.fi](http://www.vihtavuori.fi)



ENB/P/011/00