



**VIHTAVUORI**



# **Reloading Guide**

**for Centerfire Cartridges**

**Edition 6**

# Burning Rate Chart

Current canister powders in order of *approximate* burning rate.  
This list is for reference only and **not** to be used for developing loads.

|              | Vihtavuori   | Norma  | RWS          | VECTAN     | PB      | IMR               | Hodgdon            | Accurate  | W-W        | Alliant                   | Ramshot                 |
|--------------|--------------|--------|--------------|------------|---------|-------------------|--------------------|-----------|------------|---------------------------|-------------------------|
| Fast Burning | N310         | R1     | P805<br>P801 | Ba10       |         |                   | Titewad            |           |            |                           |                         |
|              | N320         |        |              |            |         | Trail Boss        | HP38               | Nitro 100 | WST        |                           |                         |
|              | N32C         |        |              | AS         |         | Hi-Skor700X       | Titegroup<br>Clays | Solo 1000 | 231        |                           | Bullseye<br>Competition |
|              | N330         |        | P804<br>P803 | A1         |         | PB                | Clays Int'l        | No. 2     | WSL        | Red Dot                   |                         |
|              | N340         |        |              | Ba9        | PCL501  | SR7625            |                    | Solo 1250 | 473        | American Select           |                         |
|              | 3N37         |        |              | SP8        |         |                   | Clays Univer.      | No. 5     | WSF        | Promo                     | Zip                     |
|              | N350         |        |              | A0         | PCL504  |                   | HS-6               |           | 540        | Green Dot                 |                         |
|              | 3N38         |        |              | SP2 Pract. |         | Hi-Skor 800X      | Longshot           |           | WAP        | Unique                    | Silhouette              |
|              | N105         |        |              |            |         |                   |                    |           |            | Power Pistol              | True Blue               |
|              | N110         | R-123  |              | SP3        |         |                   | HS-7               | No. 7     | 571        | Blue Dot<br>Steel<br>2400 | Enforcer                |
|              | N120         | 200    | P806<br>R910 |            | PCL512  | SR4759            | H110               | No. 9     |            |                           |                         |
|              | N130         | 201    | R901         | Ba6        |         | IMR4227           | H4198              | 4100      | 296        |                           |                         |
|              | N133         | 202    | R902         | Tubal2000  |         |                   | Li'l Gun<br>H4227  | 5744      | 680        | 410                       |                         |
|              | Slow Burning | N530   |              | R903       |         | IMR4198           |                    |           |            |                           | Reloder 7               |
| N140         |              | 203B   |              |            | IMR3031 | Benchmark<br>H322 |                    |           |            | Reloder 11                |                         |
| N540         |              |        |              | SP10       |         | BL(C)-2           |                    |           |            | Reloder 10X               |                         |
| N150         |              | URP    | R904         | Tubal3000  |         | H335              |                    |           |            |                           | X-Terminator            |
| N550         |              |        |              | SP9        |         |                   |                    | 2495      |            |                           |                         |
| N160         |              | 204    | R905         |            |         | IMR4064           | H4895              | 2520      |            | Reloder 12                | TAC                     |
| N560         |              | MRP    |              | SP7        |         | IMR4895           |                    | 4064      |            |                           |                         |
| N170         |              | MRP(2) |              |            |         | IMR4320           | Varget             |           |            |                           |                         |
| 24N41        |              |        |              | Tubal5000  |         | IMR4350           | H380               | 2700      | 760        | Reloder 15                | Big Game                |
| 20N29        |              |        |              | SP11       |         | IMR4831           | H414<br>H4350      | 4350      |            |                           |                         |
|              |              |        |              | Tubal7000  |         | IMR4831           | H450               |           | WMR        |                           | Hunter                  |
|              |              |        |              | Tubal8000  |         | IMR7828SSC        | H4831SC            |           | 785        |                           |                         |
|              |              |        |              |            |         | IMR7828           | H870               |           | WXR        | Reloder 22                | Magnum                  |
|              |              |        |              |            |         | Retumbo           |                    |           | Reloder 25 |                           |                         |
|              |              |        |              | SP13       |         | 50BMG             |                    |           |            |                           |                         |
|              |              |        |              | PCL520     |         |                   |                    |           |            |                           |                         |

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# Preface

Dear Vihtavuori customer,

The new Vihtavuori Reloading Guide Edition 6 for Centerfire Ammunition is an updated version of the previous Vihtavuori Reloading Guides. The numbering has been changed after Reloading guide 2006. The contents of this new issue has been revised with loading data for the following calibres:

| Centerfire rifle       | Centerfire pistol    |
|------------------------|----------------------|
| .223 Remington         | .38 Special          |
| .308 Winchester        | .357 Magnum          |
| .300 Winchester Magnum | .44 S&W Special      |
| 6,5 x 47 Lapua         | .44 Remington Magnum |
| 6mm BR Norma           | .45 Magnum           |

The now published new rifle reloading data concentrates on expanding and revising the powder selection for existing bullets. The handgun reloading data significantly expands the Cowboy Action Shooting data.

As a courtesy to the reloader the load tables contain also notes of compressed loads and loads to fill the case up. For flexible usage this guide features data in metric and imperial dimension systems i.e. charge weight in grams and grains as well as muzzle velocity in meters and feet per second. This reloading guide also includes the accuracy loads noted in the load tables. These loads utilize worldwide well-known Lapua cartridge components and are factory tested either for even pressure/muzzle velocity characters or even grouping, or both. These loads are highlighted in the load tables with dark grey shadowing.

All the loads in this guide are pressure tested according to the CIP method. The maximum loads given in the tables are determined according to the CIP and SAAMI maximum pressure specifications. The listed maximum loads should never be exceeded. Due to the differences in 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 a charge 15 % lower than the listed maximum load as your starting load.

The Vihtavuori powders are manufactured by Eurenco Vihtavuori Oy in the Vihtavuori plant. Sales and marketing of the reloading powders as well as customer service are carried out by Nammo Lapua Oy. The contact details of Lapua customer service and a listing of Vihtavuori distributors can be found at the end of this guide. For latest updates in data and distributors check also [www.vihtavuori.fi](http://www.vihtavuori.fi) or [www.lapua.com](http://www.lapua.com), where this guide can also be downloaded in PDF-format.

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

The fastest burning rifle powder from Vihtavuori. Similar to Hodgdon H110 and Winchester 296. N110 can be used in small rifle cases like .22 Hornet and .30 Carbine but also in magnum pistol and revolver cartridges like .357 S&W Magnum, .41 Magnum, .44 Magnum, .454 Casull and .500 S&W.

### N120

Slower burning powder for small capacity rifle cases and for lighter bullets in many .22 caliber loads. N120 needs higher pressure than N110 in order to optimize burning. Burning rate is near to Accurate 1680, IMR 4198 and Reloder 7. N120 is suitable also for 7,62x39, .30-30 Winchester and .444 Marlin.

### N130

This powder is used in many factory loaded caliber .22 and 6 mm PPC cartridges. Suitable also for lighter bullets in caliber .223 Remington and for straight-wall rifle cases like .45-70 Government and .458 Winchester Magnum. Burning rate is close to Hodgdon H322 and Accurate 2230.

### N133

A choice of many bench rest and standard rifle shooters who are using 6 mm PPC. Used also in many loads of .222 Remington, .223 Remington and as well in other applications where a relatively fast burning powder is needed, like in .45-70 Government. Similarly burning powders are Norma 201, Hodgdon H335 and Vectan SP10.

### N135

An excellent powder for .308 Winchester loads with bullet weight less than 10 grams (155 grains). It will fit applications similar to IMR4064, Hodgdon H4895 or Accurate 2520. Capability for various loads ranging from .17 Remington to .458 Winchester Magnum.

### N140

A true multipurpose powder, which can usually be used in place of IMR4320, Reloder 15 or Hodgdon H380. Good choice also for .223 Remington, .22-250 Remington, .308 Winchester, .30-06 Springfield, 8x57 IS (8 mm Mauser) and .375 H&H Magnum.

### N150

This powder burns a bit slower than N140 and works as well as Hodgdon H414 and Winchester 760. Typically used with heavier bullets in accuracy and hunting loads of cartridges with middle case volumes, like .308 Winchester, 6,5x55 SE and .30-06 Springfield.

### N160

A slow burning powder for Magnum cartridges and calibers with large case volume and comparatively small bullet diameter. Burning speed of N160 is close to Reloder 19, Winchester WMR and the various 4831's. For example some ideal applications are: .243 Winchester, 6,5-.284 Norma, 7 mm Weatherby Magnum, .300 Winchester Magnum, .338 Winchester Magnum and all the Winchester Short Magnums.

### N165

A very slow burning powder for Magnum cartridges with heavy bullets. N165 offers performance equal to Norma MRP and Reloder 22. To be used with heavy bullets in calibers ranging from 6,5x55 SE all the way to .416 Rigby.

### N170

The slowest burning N100 series rifle powder from Vihtavuori and one of the slowest canister reloading powders generally available from any manufacturer. It will fit applications similar to Hodgdon H1000 and Accurate 8700. Good performances in most of the belted Magnum cartridges like .300 Weatherby Magnum and suitable also for .300 Remington Ultra Magnum and .338 Lapua Magnum.

## 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.

# Rifle Powders

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 for burning rates:

## N530

This is the fastest burning powder in the N500 series and its burning rate is close to Vihtavuori N135 and Hodgdon BL-C(2). Developed especially for the 5,56 mm NATO-cartridges and it gives excellent performances in many .45-70 Government loads and also in .308 Winchester loads with bullet weight less than 10 grams (155 grains).

## N540

Faster burning powder with a burning rate like with N140 and close to Hodgdon H414 and Winchester 760. To situations where more power is needed, especially for .223 Remington, .308 Winchester and .30-06 Springfield loads with heavier bullets.

## N550

Burning rate is like with N150 and close to IMR 4350 and Reloder 19. Good choice for more powerful loads for 6,5x55 SE, .308 Winchester, .30-06 Springfield and for many others.

## N560

Burning rate is between N160 and N165 and close to Norma MRP and Reloder 22. Powder especially for Magnum cartridges to get out the best power for example from .270 Winchester, 7 mm Remington Magnum, 7 mm Weatherby Magnum, .300

Winchester Magnum, .300 Weatherby Magnum and .338 Lapua Magnum.

## N570

This is the newest member of the N500 series powders and also the slowest burning. The burning rate of N570 is near to N170 and it is faster burning than 24N41. The characteristics of this high energy powder with large grain size bring out the best in most of the large volume cases like for example in 6,5-.284 Norma, .300 Winchester Magnum, .300 Remington Ultra Magnum, .338 Lapua Magnum and .30-378 Weatherby Magnum.

## Powders for the .50 BMG

For .50 BMG there are two special Vihtavuori reloading powders available: 24N41 and 20N29. They are, like N100 series, single base surface treated powders. Their burning rate is slower and grain size larger than that of the N100 series rifle reloading powders. The renewed relative burning rate of the 24N41 is 39 and that of the 20N29 respectively 36, when N110 is given the index 100, and therefore 24N41 is slightly faster burning than 20N29. There is reloading data available also for some other magnum rifle calibers with these powders and 20N29 has gained reputation also when used eg. in .300 Lapua Magnum and in .30-378 Weatherby Magnum.

# Handgun Powders

Handgun powders include five N300 series propellants, three special propellants and one propellant applied especially for Cowboy Action Shooting:

## N310

Very fast burning and competitive with Alliant Bullseye, Hodgdon HP38 and Vectan Ba 10. It has applications in a very wide range from .32 S&W Long Wadcutter up to .45 ACP.

## N320

A comparatively fast burning multipurpose handgun powder with burning rate about the same as Winchester 231 or Alliant Red Dot. Currently available reloading data for 9 mm Luger, .38 Super Auto, .38 Special, .357 Magnum, .40 S&W, .44 S&W Special, .44 Remington Magnum, .45 ACP and .45 Colt.

## Tin Star (N32C)

Special powder developed for Cowboy Action Shooters shooting lead bullets with revolvers and single-action rifles. It has low bulk density (less free space in the case) and it burns very clean without residues with a burning rate between N320 and N330. Reloading data is currently available for .38 Special and .44 Magnum.

## N330

Burning rate is a bit slower than with N320 and corresponding to Alliant Unique and Vectan Ba 9. Especially designed for 9 mm Luger but also suitable for .38 Special, .40 S&W, .44 S&W Special and .45 (Long) Colt.

## N340

An excellent multipurpose handgun powder with burning rate generally about like Accurate No.5 or Alliant Herco. Wide application area covers the following handgun cartridges: 9 mm Luger, 9x21 mm, .357 SIG, .38 Super Auto, .38 Special, .357 Magnum, .40 S&W, 10 mm AUTO, .44 S&W Special, .44 Remington Magnum, .45 ACP and .45 Colt.

## N350

This is the slowest burning N300 series handgun powder, which can usually be used instead of Accurate No.7, IMR Hi-Skor 800-X and Alliant Blue Dot. Appropriate choice for many powerful handgun loads, for example in calibers 9 mm Luger, 10 mm AUTO and .45 ACP.

## 3N37

Originally developed for .22 rimfire cartridges but has proven to be very versatile and desirable within all competitive handgun shooting disciplines. The burning speed of this small grain powder is near to N350 and Vectan A0. Reloading data available for all popular handgun cartridges.

## 3N38

This specially designed powder for competitive handgun shooting is recommended for high velocity loads of 9 mm Luger, .38 Super Auto and .40 S&W with moderate bullet weight. Burning rate is corresponding to Vectan SP 2.

## N105 Super Magnum

Slow burning handgun powder filling the gap between N350 and N110. Especially developed for handgun cartridges with heavy bullets and/or large case volume. Reloading data is currently available for the following cartridges: 9x21 mm, .38 Super Auto, .357 Magnum, 357 Remington Maximum, .40 S&W, 10 mm AUTO, .41 Remington Magnum, .44 Remington Magnum, .45 Colt, .45 Winchester Magnum and .454 Casull.



# 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 worse 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 12 and 13.

## 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 effect 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 should be 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 and Storage of Smokeless Powder

## 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.

# Properties and Storage of Smokeless Powder

## 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 bum 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.

# Properties and Storage of Smokeless Powder

## 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.

THE STORAGE CABINETS 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 pace 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 Nammo Lapua Oy. The data given here were obtained in laboratory conditions following strictly the CIP (Commission Internationale Permanente) June 13, 1990 and November 9, 1993 rules. The listed maximum loads have been determined according to the respective CIP/SAAMI maximum pressure specification, 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.

DO NOT ATTEMPT ANY EXTRAPOLATIONS. PLEASE FOLLOW THE DATA AS WRITTEN.  
IT IS A MUST FOR EVERY RELOADER TO READ THE RELOADING SAFETY RULES ON THE PAGES 12 AND 13 OF THIS GUIDE.

## .22 Hornet

Test barrel: 600 mm (23½"), 1 in 16" twist  
Primers: Small Rifle  
Cases: Sako, trim-to length 35,40 mm (1.394")

| Bullet |       |             |       | Powder     | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------------|-------|------------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type        | Mfg   | C.O.L.     | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |             |       | [mm] [in.] |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 2,6    | 40    | Spire Point | Speer | 43,5 1.713 | N110          | 0,52   | 8.0   | 713      | 2338         | 0,65   | 10.1  | 813      | 2668  |
| 2,9    | 45    | Spitzer     | Speer | 43,5 1.713 | N110          | 0,48   | 7.3   | 654      | 2144         | 0,60   | 9.3   | 746      | 2448  |
| 3,2    | 50    | Spitzer     | Speer | 43,5 1.713 | N110          | 0,47   | 7.3   | 609      | 1997         | 0,56   | 8.7   | 693      | 2274  |
|        |       |             |       |            | N120          | 0,62   | 9.5   | 612      | 2008         | 0,74   | 11.3  | 724      | 2375  |
| 3,6    | 55    | Spitzer     | Speer | 43,5 1.713 | N110          | 0,41   | 6.4   | 561      | 1841         | 0,53F  | 8.2F  | 644      | 2111  |
|        |       |             |       |            | N120          | 0,58   | 9.0   | 574      | 1884         | 0,69   | 10.6  | 679      | 2229  |

F = Case full

## .222 Remington

Test barrel: 580 mm (23"), 1 in 14" twist  
Primers: Small Rifle  
Cases: LAPUA, trim-to length 43,00 mm (1.693")

| Bullet |       |             |         | Powder     | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------------|---------|------------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type        | Mfg     | C.O.L.     | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |             |         | [mm] [in.] |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 2,6    | 40    | Spire Point | Speer   | 53,0 2.087 | N110          | 0,93   | 14.3  | 907      | 2976         | 1,05   | 16.2  | 977      | 3205  |
|        |       | Hornet      | Sierra  | 52,0 2.047 | N120          | 1,30   | 20.1  | 991      | 3251         | 1,35   | 20.8  | 1028     | 3373  |
|        |       | Spire Point | Speer   | 52,0 2.047 | N120          | 1,29   | 19.9  | 973      | 3192         | 1,38   | 21.3  | 1051     | 3448  |
|        |       |             |         | 52,5 2.067 | N130          | 1,40   | 21.6  | 973      | 3192         | 1,51   | 23.3  | 1047     | 3435  |
|        |       |             |         | 52,0 2.047 | N133          | 1,48   | 22.8  | 984      | 3228         | 1,63   | 25.2  | 1072     | 3517  |
| 2,9    | 45    | Spitzer     | Speer   | 53,0 2.087 | N110          | 0,88   | 13.6  | 848      | 2782         | 1,00   | 15.4  | 917      | 3009  |
|        |       |             |         |            | N120          | 1,25   | 19.3  | 925      | 3035         | 1,34   | 20.7  | 993      | 3258  |
|        |       | Hornet      | Hornady | 53,6 2.110 | N130          | 1,41   | 21.8  | 951      | 3120         | 1,50   | 23.1  | 1018     | 3340  |
|        |       | Spitzer     | Speer   | 53,0 2.087 | N133          | 1,47   | 22.7  | 943      | 3094         | 1,57   | 24.2  | 1015     | 3330  |
| 3,2    | 50    | SXSP        | Hornady | 53,8 2.118 | N120          | 1,21   | 18.7  | 876      | 2874         | 1,30   | 20.1  | 942      | 3091  |
|        |       |             |         |            | N130          | 1,33   | 20.5  | 889      | 2917         | 1,43   | 22.1  | 958      | 3143  |
|        |       |             |         |            | N133          | 1,44   | 22.2  | 905      | 2969         | 1,55   | 23.9  | 980      | 3215  |
|        |       |             |         |            | N135          | 1,40   | 21.6  | 831      | 2726         | 1,52F  | 23.5F | 922      | 3025  |

F = Case full

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

## .222 Remington

Test barrel: 580 mm (23"), 1 in 14" twist  
Primers: Small Rifle  
Cases: Lapua, trim-to length 43,00 mm (1.693")

| Bullet |       |       |         | Powder     | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------|---------|------------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type  | Mfg     | C.O.L.     | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |       |         | [mm] [in.] |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 3,3    | 51    | G494  | Lapua   | 54,0 2.126 | N120          | 1,15   | 17.7  | 863      | 2831         | 1,27   | 19.6  | 956      | 3136  |
|        |       |       |         |            | N130          | 1,26   | 19.4  | 877      | 2877         | 1,39   | 21.4  | 979      | 3212  |
|        |       |       |         |            | N133          | 1,35   | 20.8  | 909      | 2982         | 1,47   | 22.7  | 971      | 3186  |
| 3,4    | 52    | HPBT  | Sierra  | 54,0 2.126 | N130          | 1,27   | 19.6  | 864      | 2835         | 1,39   | 21.4  | 922      | 3025  |
|        |       |       |         |            | N133          | 1,39   | 21.4  | 867      | 2844         | 1,50   | 23.1  | 915      | 3002  |
|        |       |       |         |            | N135          | 1,49   | 23.0  | 891      | 2923         | 1,60   | 24.7  | 944      | 3097  |
| 3,6    | 55    | SP    | Sako    | 54,2 2.134 | N120          | 1,17   | 18.1  | 834      | 2736         | 1,27   | 19.6  | 901      | 2956  |
|        |       | FMJBT | Hornady | 53,8 2.118 | N130          | 1,29   | 19.9  | 854      | 2802         | 1,39   | 21.4  | 922      | 3025  |
|        |       | SP    | Sako    | 54,2 2.134 | N133          | 1,41   | 21.8  | 871      | 2858         | 1,51   | 23.3  | 934      | 3064  |
|        |       |       |         |            | N135          | 1,46   | 22.5  | 866      | 2841         | 1,51F  | 23.3F | 899      | 2949  |
| 3,6    | 55    | FMJ   | Lapua   | 53,9 2.122 | N120          | 1,15   | 17.7  | 837      | 2746         | 1,25   | 19.3  | 911      | 2989  |
|        |       |       |         |            | N130          | 1,25   | 19.3  | 865      | 2838         | 1,36   | 21.0  | 938      | 3077  |
|        |       |       |         |            | N133          | 1,31   | 20.2  | 850      | 2789         | 1,43   | 20.7  | 908      | 2979  |
|        |       |       |         |            | N135          | 1,40   | 21.6  | 858      | 2815         | 1,45F  | 22.4F | 916      | 3005  |
| 3,9    | 60    | HP    | Hornady | 54,0 2.126 | N120          | 1,11   | 17.1  | 779      | 2556         | 1,23   | 19.0  | 850      | 2789  |
|        |       |       |         | 53,8 2.118 | N130          | 1,25   | 19.3  | 805      | 2641         | 1,37   | 21.1  | 877      | 2877  |
|        |       |       |         | 54,0 2.126 | N133          | 1,35   | 20.8  | 820      | 2690         | 1,46   | 22.5  | 892      | 2927  |
|        |       |       |         |            | N135          | 1,40   | 21.6  | 836      | 2743         | 1,52F  | 23.5F | 868      | 2848  |
| 4,5    | 69    | HPBT  | Sierra  | 54,0 2.126 | N130          | 1,18   | 18.2  | 749      | 2457         | 1,26   | 19.4  | 805      | 2641  |
|        |       |       |         |            | N133          | 1,27   | 19.6  | 768      | 2520         | 1,36   | 21.0  | 820      | 2690  |
|        |       |       |         |            | N135          | 1,31   | 20.2  | 772      | 2533         | 1,43   | 22.1  | 831      | 2726  |
|        |       |       |         |            | N140          | 1,44   | 22.2  | 778      | 2552         | 1,53   | 23.6  | 837      | 2746  |

F = Case full

█ = Accuracy load

## .223 Remington

Test barrel: 620 mm (25"), 1 in 12" twist  
Primers: Small Rifle  
Cases: Lapua, trim-to length 44,50 mm (1.752")

| Bullet |       |             |        | Powder     | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------------|--------|------------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type        | Mfg    | C.O.L.     | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |             |        | [mm] [in.] |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 2,6    | 40    | Spire Point | Speer  | 52,7 2.075 | N120          | 1,23   | 19.0  | 963      | 3159         | 1,49   | 23.0  | 1118     | 3668  |
|        |       |             |        |            | N130          | 1,46   | 22.5  | 1032     | 3386         | 1,65   | 25.5  | 1147     | 3763  |
|        |       |             |        |            | N133          | 1,54   | 23.8  | 1037     | 3402         | 1,68F  | 25.9F | 1105     | 3625  |
| 2,9    | 45    | Spitzer     | Speer  | 54,0 2.126 | N120          | 1,25   | 19.3  | 933      | 3061         | 1,48   | 22.8  | 1072     | 3517  |
|        |       |             |        |            | N130          | 1,44   | 22.2  | 991      | 3251         | 1,62   | 25.0  | 1092     | 3583  |
|        |       |             |        |            | N133          | 1,64   | 25.3  | 1010     | 3314         | 1,68F  | 25.9F | 1034     | 3392  |
|        |       |             |        |            | N135          | 1,64   | 25.3  | 1010     | 3314         | 1,68F  | 25.9F | 1034     | 3392  |
| 3,2    | 50    | TNT-HP      | Speer  | 57,0 2.244 | N120          | 1,25   | 19.3  | 911      | 2989         | 1,47   | 22.7  | 1036     | 3399  |
|        |       |             |        |            | N130          | 1,43   | 22.1  | 947      | 3107         | 1,59   | 24.5  | 1046     | 3432  |
|        |       |             |        |            | N133          | 1,56   | 24.1  | 990      | 3248         | 1,68F  | 25.9F | 1077     | 3533  |
|        |       |             |        |            | N135          | 1,65   | 25.5  | 999      | 3278         | 1,68F  | 25.9F | 1018     | 3340  |
| 3,3    | 51    | HPCE        | Lapua  | 57,0 2.244 | N120          | 1,23   | 19.0  | 909      | 2982         | 1,37   | 21.1  | 991      | 3251  |
|        |       |             |        |            | N130          | 1,35   | 20.8  | 930      | 3051         | 1,51   | 23.3  | 1018     | 3340  |
|        |       |             |        |            | N530          | 1,53   | 23.6  | 963      | 3159         | 1,66   | 25.6  | 1052     | 3451  |
|        |       |             |        |            | N133          | 1,45   | 22.4  | 943      | 3094         | 1,61   | 24.8  | 1033     | 3389  |
|        |       |             |        |            | N135          | 1,54   | 23.8  | 957      | 3140         | 1,68F  | 25.9  | 1034     | 3392  |
| 3,4    | 52    | HPBT        | Sierra | 57,0 2.244 | N130          | 1,37   | 21.1  | 936      | 3071         | 1,54   | 23.8  | 1028     | 3373  |
|        |       |             |        |            | N133          | 1,46   | 22.5  | 948      | 3110         | 1,62   | 25.0  | 1033     | 3389  |
|        |       |             |        |            | N135          | 1,54   | 23.8  | 808      | 2651         | 1,66F  | 25.6F | 1039     | 3409  |

F = Case full

█ = Accuracy load

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



# .223 Remington

Test barrel: 620 mm (25"), 1 in 12" twist (\* 1 in 7" twist)  
 Primers: Small Rifle  
 Cases: LAPUA, trim-to length 44,50 mm (1.752")

| Bullet |       |                      |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|----------------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type                 | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                      |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 3,6    | 55    | FMJBT                | Hornady | 57,0   | 2.244  | N120          | 1,21   | 18.7  | 889      | 2917         | 1,34   | 20.7  | 960      | 3150  |
|        |       |                      |         |        |        | N130          | 1,41   | 21.8  | 956      | 3136         | 1,52   | 23.5  | 1013     | 3323  |
|        |       |                      |         |        |        | N530          | 1,50   | 23.1  | 941      | 3087         | 1,62   | 25.0  | 1022     | 3353  |
|        |       |                      |         |        |        | N133          | 1,43   | 22.1  | 928      | 3045         | 1,59   | 24.5  | 1006     | 3301  |
|        |       |                      |         |        |        | N135          | 1,51   | 23.3  | 938      | 3077         | 1,66   | 25.6  | 1017     | 3337  |
| 3,6    | 55    | FMJ                  | Lapua   | 57,0   | 2.244  | N140          | 1,60   | 24.7  | 930      | 3051         | 1,74   | 26.8  | 1019     | 3343  |
|        |       |                      |         |        |        | N120          | 1,21   | 18.7  | 876      | 2874         | 1,35   | 20.8  | 953      | 3127  |
|        |       |                      |         |        |        | N130          | 1,33   | 20.5  | 895      | 2936         | 1,50   | 23.1  | 985      | 3232  |
|        |       |                      |         |        |        | N530          | 1,51   | 23.3  | 931      | 3054         | 1,64   | 25.3  | 1015     | 3330  |
|        |       |                      |         |        |        | N133          | 1,43   | 22.1  | 911      | 2989         | 1,59   | 24.5  | 999      | 3278  |
| 3,9    | 60    | HP                   | Hornady | 57,0   | 2.244  | N135          | 1,51   | 23.3  | 927      | 3041         | 1,68F  | 25.9F | 999      | 3278  |
|        |       |                      |         |        |        | N140          | 1,61   | 24.8  | 917      | 3009         | 1,77F  | 27.3F | 1004     | 3294  |
|        |       |                      |         |        |        | N130          | 1,33   | 20.5  | 874      | 2867         | 1,50   | 23.1  | 967      | 3173  |
|        |       |                      |         |        |        | N133          | 1,43   | 22.1  | 888      | 2913         | 1,60   | 24.7  | 978      | 3209  |
|        |       |                      |         |        |        | N135          | 1,50   | 23.1  | 893      | 2930         | 1,67   | 25.8  | 976      | 3202  |
| 4,0    | 62    | FMJBT                | Speer   | 54,7   | 2.154  | N140          | 1,62   | 25.0  | 895      | 2936         | 1,74F  | 26.8F | 965      | 3166  |
|        |       |                      |         |        |        | N530          | 1,43   | 22.1  | 861      | 2825         | 1,56   | 24.1  | 953      | 3127  |
|        |       |                      |         |        |        | N135          | 1,43   | 22.1  | 852      | 2795         | 1,60   | 24.7  | 942      | 3091  |
|        |       |                      |         |        |        | N140          | 1,62   | 25.0  | 901      | 2956         | 1,70F  | 26.2F | 943      | 3094  |
|        |       |                      |         |        |        | N133          | 1,34   | 20.7  | 792      | 2598         | 1,48   | 22.8  | 867      | 2844  |
| 4,5    | 69    | HPBT <sup>1)</sup>   | Sierra  | 57,0   | 2.244  | N135          | 1,40   | 21.6  | 804      | 2638         | 1,54   | 23.8  | 875      | 2871  |
|        |       |                      |         |        |        | N140          | 1,53   | 23.6  | 820      | 2690         | 1,68   | 25.9  | 897      | 2943  |
|        |       |                      |         |        |        | N540          | 1,56   | 24.1  | 824      | 2703         | 1,71   | 26.4  | 910      | 2986  |
|        |       |                      |         |        |        | N530          | 1,37   | 21.1  | 809      | 2654         | 1,47   | 22.7  | 869      | 2851  |
|        |       |                      |         |        |        | N133          | 1,31   | 20.2  | 789      | 2589         | 1,42   | 21.9  | 849      | 2785  |
| 4,5    | 69    | Scenar <sup>1)</sup> | Lapua   | 57,4   | 2.260  | N135          | 1,37   | 21.1  | 796      | 2612         | 1,49   | 23.0  | 862      | 2828  |
|        |       |                      |         |        |        | N140          | 1,48   | 22.8  | 823      | 2700         | 1,60   | 24.7  | 879      | 2884  |
|        |       |                      |         |        |        | N540          | 1,50   | 23.1  | 807      | 2648         | 1,65   | 25.5  | 895      | 2936  |
|        |       |                      |         |        |        | N135          | 1,34   | 20.7  | 752      | 2467         | 1,51   | 23.3  | 830      | 2723  |
|        |       |                      |         |        |        | N140          | 1,43   | 22.1  | 754      | 2474         | 1,62   | 25.0  | 843      | 2766  |
| 4,9    | 75    | BTHP <sup>2)</sup>   | Hornady | 57,4   | 2.260  | N540          | 1,50   | 23.1  | 773      | 2536         | 1,67   | 25.8  | 863      | 2831  |
|        |       |                      |         |        |        | N530          | 1,28   | 19.8  | 712      | 2336         | 1,43   | 22.1  | 795      | 2608  |
|        |       |                      |         |        |        | N135          | 1,27   | 19.6  | 706      | 2316         | 1,46   | 22.5  | 791      | 2595  |
|        |       |                      |         |        |        | N140          | 1,36   | 21.0  | 712      | 2336         | 1,60   | 24.7  | 810      | 2657  |
|        |       |                      |         |        |        | N540          | 1,47   | 22.7  | 740      | 2428         | 1,64   | 25.3  | 828      | 2717  |
| 5,0    | 77    | HPBT <sup>2)</sup>   | Sierra  | 54,7   | 2.154  | N530          | 1,30   | 20.0  | 713      | 2339         | 1,50   | 23.1  | 801      | 2630  |
|        |       |                      |         |        |        | N135          | 1,22   | 18.8  | 711      | 2333         | 1,40   | 21.6  | 788      | 2587  |
|        |       |                      |         |        |        | N140          | 1,34   | 20.7  | 730      | 2395         | 1,49   | 23.0  | 807      | 2646  |
|        |       |                      |         |        |        | N540          | 1,39   | 21.4  | 730      | 2395         | 1,53   | 23.7  | 808      | 2652  |
|        |       |                      |         |        |        | N540          | 1,39   | 21.4  | 730      | 2395         | 1,53   | 23.7  | 808      | 2652  |

F = Case full

<sup>1)</sup> 1 in 10" twist

<sup>2)</sup> 1 in 7" twist

<sup>3)</sup> Test barrel with a long throat to accept the C.O.L. of 65 mm (2,559")

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

# .22 PPC-USA

Test barrel: 610 mm (24"), 1 in 14" twist  
 Primers: Small Rifle  
 Cases: Sako, trim-to length 38,30 mm (1.508")

| Bullet |       |         |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 3,4    | 52    | HPBT    | Sierra | 51,4   | 2.024  | N120          | 1,33   | 20.5  | 919      | 3016         | 1,56   | 24.1  | 1039     | 3408  |
|        |       |         |        |        |        | N130          | 1,43   | 22.1  | 934      | 3063         | 1,66   | 25.6  | 1069     | 3507  |
|        |       |         |        |        |        | N133          | 1,51   | 23.3  | 947      | 3107         | 1,77   | 27.3  | 1087     | 3565  |
| 3,6    | 55    | Spitzer | Speer  | 51,8   | 2.039  | N135          | 1,65   | 25.5  | 971      | 3185         | 1,90   | 29.2  | 1099     | 3607  |
|        |       |         |        |        |        | N130          | 1,41   | 21.8  | 898      | 2946         | 1,69   | 26.1  | 1026     | 3367  |
|        |       |         |        |        |        | N133          | 1,45   | 22.4  | 901      | 2956         | 1,78   | 27.4  | 1039     | 3409  |
|        |       |         |        |        |        | N135          | 1,68   | 25.9  | 961      | 3151         | 1,93   | 29.7  | 1103     | 3617  |

# .22-250 Remington

Test barrel: 580 mm (22"), 1 in 14" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 48,30 mm (1.902")

| Bullet |       |                    |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type               | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                    |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 2,9    | 45    | Spitzer            | Speer   | 58,9   | 2.319  | N130          | 1,99   | 30.7  | 1106     | 3628         | 2,15   | 33.2  | 1180     | 3872  |
|        |       |                    |         |        |        | N135          | 2,19   | 33.8  | 1102     | 3614         | 2,34   | 36.1  | 1180     | 3872  |
|        |       |                    |         |        |        | N140          | 2,32   | 35.8  | 1108     | 3634         | 2,50   | 38.6  | 1197     | 3926  |
| 3,2    | 50    | Spitzer            | Speer   | 59,6   | 2.346  | N130          | 1,75   | 27.1  | 958      | 3143         | 1,95   | 30.1  | 1068     | 3506  |
|        |       |                    |         |        |        | N135          | 1,94   | 30.0  | 983      | 3227         | 2,15   | 33.2  | 1086     | 3563  |
|        |       |                    |         |        |        | N140          | 2,08   | 32.1  | 977      | 3206         | 2,34   | 36.1  | 1088     | 3571  |
| 3,6    | 55    | Spitzer            | Speer   | 59,6   | 2.346  | N150          | 2,14   | 32.9  | 978      | 3208         | 2,40   | 37.0  | 1087     | 3565  |
|        |       |                    |         |        |        | N135          | 1,98   | 30.6  | 974      | 3197         | 2,15   | 33.2  | 1051     | 3449  |
|        |       |                    |         |        |        | N140          | 2,16   | 33.3  | 986      | 3233         | 2,31   | 35.6  | 1058     | 3472  |
| 3,9    | 60    | HP                 | Hornady | 59,6   | 2.346  | N150          | 2,22   | 34.3  | 988      | 3242         | 2,41   | 37.2  | 1069     | 3507  |
|        |       |                    |         |        |        | N140          | 2,03   | 31.3  | 929      | 3046         | 2,22   | 34.2  | 1006     | 3301  |
|        |       |                    |         |        |        | N150          | 2,07   | 32.0  | 924      | 3030         | 2,29   | 35.3  | 1007     | 3303  |
| 4,5    | 69    | HPBT <sup>1)</sup> | Sierra  | 59,6   | 2.346  | N140          | 1,83   | 28.2  | 832      | 2731         | 2,16   | 33.4  | 949      | 3114  |
|        |       |                    |         |        |        | N150          | 1,91   | 29.4  | 845      | 2773         | 2,24   | 34.6  | 956      | 3138  |
|        |       |                    |         |        |        | N160          | 2,36   | 36.4  | 863      | 2830         | 2,66   | 41.0  | 981      | 3219  |
|        |       |                    |         |        |        | N540          | 1,90   | 29.4  | 857      | 2812         | 2,22   | 34.3  | 977      | 3205  |
|        |       |                    |         |        |        | N550          | 2,07   | 31.9  | 878      | 2879         | 2,39   | 36.9  | 1001     | 3284  |
|        |       |                    |         |        |        | N560          | 2,33   | 35.9  | 866      | 2842         | 2,76   | 42.6  | 1002     | 3288  |

<sup>1)</sup> 1 in 10" rifle twist

# 6 mm PPC-USA

Test barrel: 580 mm (23"), 1 in 14" twist  
 Primers: Small Rifle  
 Cases: Sako, trim-to length 38,30 mm (1.508")

| Bullet |       |      |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 4,4    | 68    | HPFB | Euber  | 53,6   | 2.110  | N130          | 1,52   | 23.4  | 843      | 2766         | 1,68   | 25.9  | 928      | 3045  |
|        |       |      |        |        |        | N133          | 1,63   | 25.2  | 840      | 2756         | 1,83C  | 28.2C | 951      | 3120  |
| 4,5    | 70    | HPBT | Sierra | 53,6   | 2.110  | N120          | 1,39   | 21.5  | 809      | 2654         | 1,55   | 23.9  | 901      | 2956  |
|        |       |      |        |        |        | N130          | 1,47   | 22.7  | 820      | 2690         | 1,69   | 26.1  | 934      | 3064  |
|        |       |      |        |        |        | N133          | 1,59   | 24.6  | 826      | 2710         | 1,79C  | 27.6C | 935      | 3068  |

C = Compressed load

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

## 6 mm BR Norma

Test barrel: 650 mm (25½"), 1 in 8" twist  
 Primers: Small Rifle  
 Cases: Lapua, trim-to length 39,40 mm (1.551")

| Bullet |       |                      |        |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |      |
|--------|-------|----------------------|--------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|------|
| Weight |       | Type                 | Mfg    | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |      |
| [g]    | [grs] |                      |        | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |      |
| 4,5    | 70    | HPBT                 | Sierra | 57,0 2.244 | N133   | 1,64          | 25.3   | 864   | 2834     | 1,86         | 28.7   | 957   | 3140     |      |
|        |       |                      |        |            |        | N135          | 1,88   | 29.0  | 901      | 2956         | 2,20   | 33.9  | 1009     | 3310 |
| 5,0    | 77    | HP                   | Lapua  | 57,0 2.244 | N135   | 1,81          | 27.9   | 880   | 2887     | 2,01         | 31.0   | 957   | 3140     |      |
|        |       |                      |        |            |        | N140          | 1,94   | 29.9  | 882      | 2894         | 2,15   | 33.2  | 965      | 3166 |
|        |       |                      |        |            |        | N540          | 2,00   | 30.9  | 888      | 2913         | 2,18   | 33.6  | 980      | 3215 |
|        |       |                      |        |            |        | N133          | 1,85   | 28.5  | 884      | 2900         | 2,01   | 31.0  | 964      | 3163 |
| 5,0    | 77    | Silver Jacket HP     | Lapua  | 60,0 2.362 | N140   | 2,05          | 31.6   | 900   | 2953     | 2,22         | 34.3   | 982   | 3222     |      |
|        |       |                      |        |            |        | N540          | 2,14   | 33.0  | 914      | 2999         | 2,31   | 35.6  | 999      | 3278 |
|        |       |                      |        |            |        | N140          | 1,68   | 26.0  | 788      | 2584         | 1,93   | 29.8  | 871      | 2858 |
|        |       |                      |        |            |        | N540          | 1,69   | 26.1  | 757      | 2484         | 2,20   | 33.9  | 952      | 3123 |
| 5,8    | 90    | FMJ                  | Lapua  | 60,0 2.362 | N140   | 1,68          | 26.0   | 788   | 2584     | 1,93         | 29.8   | 871   | 2858     |      |
|        |       |                      |        |            |        | N540          | 1,69   | 26.1  | 757      | 2484         | 2,20   | 33.9  | 952      | 3123 |
|        |       |                      |        |            |        | N135          | 1,85   | 28.5  | 830      | 2723         | 2,04   | 31.5  | 906      | 2972 |
|        |       |                      |        |            |        | N140          | 1,96   | 30.2  | 847      | 2779         | 2,12   | 32.7  | 922      | 3025 |
| 5,8    | 90    | Silver Jacket Scenar | Lapua  | 60,0 2.362 | N540   | 2,02          | 31.2   | 854   | 2802     | 2,19         | 33.8   | 936   | 3071     |      |
|        |       |                      |        |            |        | N140          | 1,66   | 25.6  | 737      | 2419         | 1,88   | 29.0  | 825      | 2707 |
|        |       |                      |        |            |        | N540          | 1,81   | 27.9  | 772      | 2533         | 2,01   | 31.0  | 857      | 2812 |
|        |       |                      |        |            |        | N140          | 1,67   | 25.8  | 746      | 2447         | 1,87   | 28.9  | 821      | 2694 |
| 6,8    | 105   | Scenar               | Lapua  | 60,0 2.362 | N540   | 1,75          | 27.0   | 756   | 2480     | 1,97         | 30.4   | 846   | 2776     |      |
|        |       |                      |        |            |        | N140          | 1,83   | 28.2  | 763      | 2503         | 2,02   | 31.2  | 843      | 2766 |
|        |       |                      |        |            |        | N150          | 1,85   | 28.5  | 769      | 2523         | 2,05   | 31.6  | 841      | 2759 |
| 6,8    | 105   | Silver Jacket Scenar | Lapua  | 60,0 2.362 | N540   | 1,88          | 29.0   | 777   | 2549     | 2,08         | 32.1   | 861   | 2825     |      |

= Accuracy load

## .243 Winchester

Test barrel: 580 mm (23"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 51,80 mm (2.039")

| Bullet |       |           |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |      |
|--------|-------|-----------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|------|
| Weight |       | Type      | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |      |
| [g]    | [grs] |           |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |      |
| 3,7    | 58    | V-Max     | Hornady | 65,5 2.579 | N135   | 2,31          | 35.6   | 1037  | 3402     | 2,55         | 39.3   | 1127  | 3698     |      |
|        |       |           |         |            |        | N140          | 2,53   | 39.0  | 1043     | 3422         | 2,80   | 43.2  | 1137     | 3730 |
|        |       |           |         |            |        | N540          | 2,45   | 37.8  | 1051     | 3448         | 2,87   | 44.3  | 1151     | 3776 |
|        |       |           |         |            |        | N550          | 2,65   | 40.9  | 1067     | 3501         | 2,88   | 44.4  | 1165     | 3822 |
| 4,5    | 70    | SXSP      | Hornady | 67,0 2.638 | N133   | 2,06          | 31.8   | 922   | 3026     | 2,59         | 39.9   | 1016  | 3334     |      |
|        |       |           |         |            |        | N135          | 2,50   | 38.6  | 959      | 3146         | 2,69   | 41.5  | 1039     | 3409 |
|        |       |           |         |            |        | N140          | 2,66   | 41.0  | 974      | 3196         | 2,88   | 44.5  | 1068     | 3505 |
|        |       |           |         |            |        | N150          | 2,72   | 41.9  | 976      | 3200         | 2,95   | 45.5  | 1064     | 3492 |
| 5,2    | 80    | FMJ       | Hornady | 67,0 2.638 | N160   | 3,18          | 49.1   | 995   | 3266     | 3,40         | 52.5   | 1086  | 3563     |      |
|        |       |           |         |            |        | N135          | 2,22   | 34.2  | 876      | 2872         | 2,51   | 38.7  | 960      | 3148 |
|        |       |           |         |            |        | N140          | 2,34   | 36.1  | 882      | 2894         | 2,68   | 41.3  | 978      | 3209 |
|        |       |           |         |            |        | N150          | 2,24   | 34.6  | 871      | 2856         | 2,69   | 41.5  | 974      | 3194 |
| 5,6    | 87    | HPBT      | Hornady | 68,0 2.677 | N160   | 2,97          | 45.9   | 922   | 3025     | 3,26         | 50.3   | 1018  | 3340     |      |
|        |       |           |         |            |        | N140          | 2,28   | 35.2  | 852      | 2794         | 2,60   | 40.1  | 940      | 3085 |
|        |       |           |         |            |        | N150          | 2,16   | 33.3  | 834      | 2735         | 2,64   | 40.7  | 937      | 3073 |
|        |       |           |         |            |        | N160          | 2,86   | 44.2  | 885      | 2904         | 3,11   | 48.1  | 973      | 3192 |
| 5,8    | 90    | Naturalis | Lapua   | 67,0 2.638 | N560   | 2,85          | 44.0   | 894   | 2934     | 3,27         | 50.4   | 1000  | 3279     |      |
|        |       |           |         |            |        | N150          | 2,14   | 33.0  | 860      | 2822         | 2,42   | 37.3  | 940      | 3084 |
|        |       |           |         |            |        | N550          | 2,46   | 38.0  | 888      | 2913         | 2,66   | 41.0  | 964      | 3163 |
|        |       |           |         |            |        | N160          | 2,43   | 37.5  | 856      | 2808         | 2,80   | 43.2  | 950      | 3117 |
| 5,8    | 90    | FMJ       | Lapua   | 68,3 2.689 | N150   | 1,76          | 27.1   | 786   | 2577     | 2,15         | 33.2   | 894   | 2931     |      |
|        |       |           |         |            |        | N550          | 2,21   | 34.1  | 861      | 2825         | 2,55   | 39.3  | 965      | 3166 |
|        |       |           |         |            |        | N160          | 2,20   | 33.9  | 841      | 2758         | 2,68   | 41.4  | 960      | 3150 |

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

## .243 Winchester

Test barrel: 580 mm (23"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 51,80 mm (2.039")

| Bullet |       |                      |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |      |
|--------|-------|----------------------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|------|
| Weight |       | Type                 | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |      |
| [g]    | [grs] |                      |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |      |
| 6,2    | 95    | XFB                  | Barnes  | 68,8 2.709 | N560   | 2,11          | 32.6   | 747   | 2449     | 2,64         | 40.7   | 882   | 2893     |      |
|        |       |                      |         |            |        | N150          | 1,69   | 26.1  | 744      | 2442         | 2,13   | 32.8  | 881      | 2890 |
| 6,5    | 100   | Mega                 | Lapua   | 68,3 2.689 | N550   | 2,34          | 36.1   | 846   | 2775     | 2,67         | 41.2   | 944   | 3096     |      |
|        |       |                      |         |            |        | N160          | 2,46   | 37.9  | 845      | 2773         | 2,79   | 43.0  | 942      | 3090 |
|        |       |                      |         |            |        | N160          | 2,77   | 42.7  | 833      | 2734         | 3,04   | 46.9  | 916      | 3005 |
|        |       |                      |         |            |        | N560          | 2,74   | 42.3  | 841      | 2758         | 3,09   | 47.7  | 940      | 3085 |
| 6,5    | 100   | SPBT                 | Hornady | 67,3 2.650 | N165   | 2,96          | 45.7   | 836   | 2743     | 3,33         | 51.3   | 929   | 3047     |      |
|        |       |                      |         |            |        | N550          | 2,35   | 36.2  | 820      | 2689         | 2,63   | 40.6  | 899      | 2950 |
|        |       |                      |         |            |        | N160          | 2,48   | 38.2  | 821      | 2693         | 2,79   | 43.1  | 903      | 2962 |
|        |       |                      |         |            |        | N165          | 2,85   | 44.0  | 839      | 2753         | 3,15   | 48.6  | 925      | 3036 |
| 6,8    | 105   | Scenar <sup>1)</sup> | Lapua   | 68,3 2.689 | N160   | 2,28          | 35.2   | 744   | 2441     | 2,70         | 41.6   | 838   | 2751     |      |
|        |       |                      |         |            |        | N560          | 2,30   | 35.5  | 764      | 2508         | 2,65   | 40.9  | 868      | 2847 |

<sup>1)</sup> The test barrel rifle twist 1 in 8"

## .240 Weatherby Magnum

Test barrel: 600 mm (25"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Norma, trim-to length 63,20 mm (2.488")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |         |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |      |
|--------|-------|---------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|------|
| Weight |       | Type    | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |      |
| [g]    | [grs] |         |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |      |
| 4,9    | 75    | HP      | Hornady | 78,1 3.075 | N150   | 2,94          | 45.4   | 995   | 3266     | 3,17         | 48.9   | 1076  | 3532     |      |
|        |       |         |         |            |        | N550          | 3,20   | 49.4  | 1028     | 3371         | 3,38   | 52.2  | 1111     | 3645 |
|        |       |         |         |            |        | N160          | 3,34   | 51.6  | 1010     | 3314         | 3,52   | 54.2  | 1094     | 3589 |
| 5,0    | 77    | HP      | Lapua   | 78,1 3.075 | N150   | 2,97          | 45.8   | 990   | 3248     | 3,15         | 48.7   | 1055  | 3460     |      |
|        |       |         |         |            |        | N550          | 3,20   | 49.3  | 1014     | 3327         | 3,37   | 51.9  | 1095     | 3591 |
|        |       |         |         |            |        | N160          | 3,34   | 51.5  | 1005     | 3297         | 3,51   | 54.1  | 1084     | 3556 |
|        |       |         |         |            |        | N550          | 2,98   | 46.0  | 939      | 3081         | 3,22   | 49.6  | 1013     | 3325 |
| 5,8    | 90    | Scenar  | Lapua   | 78,1 3.075 | N160   | 3,20          | 49.3   | 938   | 3077     | 3,41         | 52.6   | 1014  | 3327     |      |
|        |       |         |         |            |        | N165          | 3,47   | 53.6  | 949      | 3114         | 3,71   | 57.2  | 1031     | 3383 |
|        |       |         |         |            |        | N550          | 2,94   | 45.4  | 891      | 2923         | 3,16   | 48.7  | 966      | 3170 |
| 6,5    | 100   | Mega    | Lapua   | 78,1 3.075 | N160   | 3,06          | 47.2   | 895   | 2936     | 3,26         | 50.3   | 956   | 3137     |      |
|        |       |         |         |            |        | N165          | 3,47   | 53.6  | 949      | 3114         | 3,62   | 55.8  | 989      | 3246 |
|        |       |         |         |            |        | N160          | 2,83   | 43.6  | 852      | 2795         | 3,15   | 48.7  | 935      | 3068 |
| 6,8    | 105   | Spitzer | Speer   | 77,8 3.063 | N560   | 3,23          | 49.8   | 887   | 2910     | 3,47         | 53.5   | 962   | 3157     |      |
|        |       |         |         |            |        | N165          | 3,33   | 51.3  | 895      | 2936         | 3,57   | 55.2  | 969      | 3180 |

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

# .25-06 Remington

Test barrel: 580 mm (23"), 1 in 10" twist  
Primers: Large Rifle  
Cases: Remington, trim-to length 63,10 mm (2.484")

| Bullet |       |        |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,6    | 87    | SPBT   | Speer  | 79,3   | 3.122  | N140          | 2,35   | 36.2  | 876      | 2873         | 2,74   | 42.3  | 961      | 3153  |
|        |       |        |        |        |        | N150          | 2,51   | 38.7  | 892      | 2925         | 2,91   | 44.9  | 980      | 3215  |
|        |       |        |        |        |        | N160          | 3,15   | 48.6  | 935      | 3069         | 3,55   | 54.8  | 1020     | 3346  |
|        |       |        |        |        |        | N165          | 3,52   | 54.3  | 960      | 3149         | 3,95   | 60.9  | 1049     | 3442  |
| 6,5    | 100   | SPBT   | Speer  | 81,2   | 3.197  | N140          | 2,60   | 40.0  | 873      | 2864         | 2,78   | 42.9  | 924      | 3031  |
|        |       |        |        |        |        | N150          | 2,66   | 41.0  | 878      | 2881         | 2,86   | 44.1  | 930      | 3051  |
|        |       |        |        |        |        | N160          | 3,24   | 50.0  | 911      | 2990         | 3,38   | 52.2  | 966      | 3169  |
|        |       |        |        |        |        | N560          | 3,16   | 48.8  | 900      | 2954         | 3,59   | 55.4  | 990      | 3248  |
|        |       |        |        |        |        | N165          | 3,44   | 53.0  | 922      | 3024         | 3,66   | 56.5  | 979      | 3212  |
|        |       |        |        |        |        | N170          | 3,55   | 54.7  | 885      | 2902         | 4,05   | 62.5  | 975      | 3199  |
| 7,8    | 120   | Spizer | Speer  | 80,2   | 3.157  | N150          | 1,95   | 30.1  | 692      | 2270         | 2,32   | 35.8  | 776      | 2546  |
|        |       |        |        |        |        | N160          | 2,50   | 38.6  | 759      | 2491         | 2,94   | 45.4  | 844      | 2769  |
|        |       |        |        |        |        | N560          | 2,81   | 43.3  | 798      | 2619         | 3,24   | 50.0  | 890      | 2920  |
|        |       |        |        |        |        | N165          | 2,69   | 41.5  | 777      | 2548         | 3,13   | 48.3  | 853      | 2799  |
|        |       |        |        |        |        | N170          | 3,17   | 48.9  | 802      | 2630         | 3,59   | 55.4  | 873      | 2864  |
| 7,8    | 120   | HPBT   | Sierra | 80,0   | 3.155  | N160          | 2,75   | 42.4  | 791      | 2597         | 3,09   | 47.7  | 871      | 2858  |
|        |       |        |        |        |        | N560          | 2,95   | 45.6  | 818      | 2685         | 3,33   | 51.4  | 903      | 2963  |
|        |       |        |        |        |        | N165          | 3,03   | 46.8  | 817      | 2681         | 3,38   | 52.2  | 889      | 2917  |
|        |       |        |        |        |        | N170          | 3,35   | 51.7  | 817      | 2682         | 3,81   | 58.8  | 904      | 2966  |

# 6,5 x 47 Lapua

Test barrel: 700 mm (27½"), 1 in 8½" twist  
Primers: Small Rifle  
Cases: Lapua, trim-to length 46,80 mm (1.843")

| Bullet |       |        |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 8,0    | 123   | Scenar | Lapua | 69,5   | 2.736  | N140          | 2,08   | 32.0  | 743      | 2436         | 2,36   | 36.4  | 840      | 2756  |
|        |       |        |       |        |        | N540          | 2,22   | 34.2  | 787      | 2581         | 2,57   | 39.7  | 907      | 2976  |
|        |       |        |       |        |        | N150          | 2,15   | 33.2  | 764      | 2508         | 2,45   | 37.8  | 855      | 2805  |
| 9,0    | 139   | Scenar | Lapua | 69,5   | 2.736  | N140          | 1,91   | 29.5  | 677      | 2221         | 2,25   | 34.7  | 773      | 2536  |
|        |       |        |       |        |        | N540          | 2,14   | 33.0  | 724      | 2374         | 2,25   | 34.7  | 836      | 2743  |
|        |       |        |       |        |        | N150          | 2,02   | 31.2  | 706      | 2316         | 2,33   | 36.0  | 787      | 2582  |

# .260 Remington

Test barrel: 475 mm (18¾"), 1 in 9" twist  
Primers: Large Rifle  
Cases: Necked-up Lapua .243 Winchester, trim-to length 51,50 mm (2.028")

| Bullet |       |        |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HPFB   | Sierra | 67,5   | 2.657  | N140          | 2,30   | 35.5  | 825      | 2708         | 2,59   | 39.9  | 906      | 2973  |
|        |       |        |        |        |        | N150          | 2,31   | 35.7  | 813      | 2669         | 2,61   | 40.3  | 892      | 2926  |
|        |       |        |        |        |        | N540          | 2,39   | 36.9  | 831      | 2725         | 2,67   | 41.2  | 912      | 2992  |
| 7,0    | 108   | Scenar | Lapua  | 71,0   | 2.795  | N150          | 2,28   | 35.1  | 791      | 2594         | 2,54   | 39.1  | 865      | 2837  |
|        |       |        |        |        |        | N540          | 2,35   | 36.2  | 802      | 2631         | 2,58   | 39.9  | 877      | 2876  |
|        |       |        |        |        |        | N160          | 2,66   | 41.0  | 814      | 2670         | 2,92   | 45.0  | 898      | 2947  |
| 7,8    | 120   | SP     | Speer  | 71,0   | 2.795  | N540          | 2,22   | 34.2  | 749      | 2456         | 2,48   | 38.2  | 825      | 2706  |
|        |       |        |        |        |        | N550          | 2,36   | 36.5  | 765      | 2511         | 2,64   | 40.7  | 835      | 2741  |
|        |       |        |        |        |        | N160          | 2,47   | 38.2  | 755      | 2478         | 2,80   | 43.2  | 838      | 2750  |
| 9,0    | 139   | Scenar | Lapua  | 71,0   | 2.795  | N550          | 2,15   | 33.1  | 690      | 2263         | 2,46   | 38.0  | 772      | 2533  |
|        |       |        |        |        |        | N160          | 2,32   | 35.8  | 692      | 2272         | 2,63   | 40.6  | 771      | 2529  |
|        |       |        |        |        |        | N560          | 2,57   | 39.6  | 704      | 2311         | 2,86   | 44.1  | 788      | 2586  |
| 10,1   | 155   | Mega   | Lapua  | 69,5   | 2.736  | N160          | 2,14   | 33.0  | 651      | 2134         | 2,41   | 37.1  | 711      | 2332  |
|        |       |        |        |        |        | N560          | 2,37   | 36.6  | 651      | 2137         | 2,72   | 42.0  | 735      | 2412  |
|        |       |        |        |        |        | N165          | 2,52   | 38.8  | 673      | 2208         | 2,83   | 43.7  | 755      | 2478  |

# 6,5 mm Grendel

Test barrel: 610 mm (24"), 1 in 10" twist  
Primers: Small Rifle  
Cases: Alex-A, trim-to length 38,50 mm (1.516")

| Bullet |       |        |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | Scenar | Lapua | 57,1   | 2.248  | N130          | 1,40   | 21.6  | 674      | 2211         | 1,76   | 27.2  | 840      | 2756  |
|        |       |        |       |        |        | N530          | 1,60   | 24.7  | 729      | 2392         | 1,90   | 29.3  | 858      | 2815  |
|        |       |        |       |        |        | N133          | 1,57   | 24.2  | 728      | 2388         | 1,90   | 29.3  | 854      | 2802  |
| 7,0    | 108   | Scenar | Lapua | 57,1   | 2.248  | N130          | 1,40   | 21.6  | 671      | 2201         | 1,69   | 26.1  | 791      | 2595  |
|        |       |        |       |        |        | N530          | 1,44   | 22.2  | 690      | 2264         | 1,73   | 26.7  | 821      | 2694  |
|        |       |        |       |        |        | N133          | 1,51   | 23.3  | 689      | 2260         | 1,80   | 27.8  | 804      | 2638  |
| 8,0    | 123   | Scenar | Lapua | 57,1   | 2.248  | N530          | 1,47   | 22.7  | 635      | 2083         | 1,73   | 26.7  | 763      | 2503  |
|        |       |        |       |        |        | N133          | 1,36   | 21.0  | 609      | 1998         | 1,73   | 26.7  | 745      | 2444  |
|        |       |        |       |        |        | N135          | 1,29   | 19.9  | 593      | 1946         | 1,75   | 27.0  | 741      | 2431  |

# 6,5 x 55 Swedish Mauser

Test barrel: 630 mm (26½"), 1 in 8½" twist  
Primers: Large Rifle  
Cases: LAPUA, trim-to length 54,80 mm (2.157")

| Bullet |       |      |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,5    | 85    | HP   | Sierra | 71,1   | 2.799  | N150          | 2,88   | 44.5  | 937      | 3073         | 3,03   | 46.8  | 1013     | 3323  |
| 6,5    | 100   | HP   | Sierra | 72,4   | 2.850  | N140          | 2,62   | 40.4  | 860      | 2822         | 2,78   | 42.8  | 911      | 2990  |
|        |       |      |        |        |        | N540          | 2,65   | 40.9  | 858      | 2815         | 2,88   | 44.4  | 938      | 3078  |
|        |       |      |        |        |        | N150          | 2,69   | 41.5  | 860      | 2822         | 2,86   | 44.1  | 915      | 3003  |
|        |       |      |        |        |        | N550          | 2,82   | 43.5  | 884      | 2900         | 3,03   | 46.8  | 960      | 3150  |
|        |       |      |        |        |        | N160          | 3,13   | 48.3  | 878      | 2881         | 3,33   | 51.4  | 942      | 3090  |
| 6,5    | 100   | FMJ  | Lapua  | 70,0   | 2.756  | N135          | 2,21   | 34.1  | 802      | 2631         | 2,55   | 39.3  | 894      | 2933  |
|        |       |      |        |        |        | N140          | 2,38   | 36.7  | 810      | 2657         | 2,75   | 42.4  | 910      | 2986  |
|        |       |      |        |        |        | N150          | 2,45   | 37.8  | 823      | 2700         | 2,79   | 43.0  | 820      | 2690  |
|        |       |      |        |        |        | N160          | 3,08   | 47.5  | 862      | 2828         | 3,39   | 52.3  | 946      | 3104  |

= Accuracy load

# 6,5 x 47 Lapua

Test barrel: 700 mm (27½"), 1 in 8½" twist  
Primers: Small Rifle  
Cases: Lapua, trim-to length 46,80 mm (1.843")

| Bullet |       |        |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | Scenar | Lapua | 69,5   | 2.736  | N133          | 2,10   | 32.4  | 870      | 2854         | 2,26   | 34.9  | 925      | 3035  |
|        |       |        |       |        |        | N135          | 2,20   | 34.0  | 890      | 2920         | 2,31   | 35.6  | 930      | 3051  |
|        |       |        |       |        |        | N140          | 2,40   | 37.0  | 900      | 2953         | 2,56   | 39.5  | 950      | 3117  |
| 7,0    | 108   | Scenar | Lapua | 69,5   | 2.736  | N133          | 1,88   | 28.9  | 781      | 2561         | 2,20   | 33.9  | 882      | 2894  |
|        |       |        |       |        |        | N135          | 1,97   | 30.4  | 789      | 2588         | 2,23   | 34.4  | 885      | 2904  |
|        |       |        |       |        |        | N140          | 2,13   | 32.9  | 799      | 2622         | 2,51   | 38.7  | 910      | 2986  |
|        |       |        |       |        |        | N150          | 2,25   | 34.7  | 820      | 2692         | 2,63   | 40.6  | 930      | 3051  |

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## 6,5 x 55 Swedish Mauser

Test barrel: 630 mm (26½"), 1 in 8½" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 54,80 mm (2.157")

| Bullet |       |                      |        |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|----------------------|--------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type                 | Mfg    | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |                      |        | [mm] [in.] |        |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    |
| 6,5    | 100   | Scenar               | Lapua  | 75,0 2.953 | N135   | 2,15          | 33.2   | 790   | 2592     | 2,44         | 37.6   | 889   | 2917     |
|        |       |                      |        |            | N140   | 2,32          | 35.8   | 790   | 2592     | 2,64         | 40.7   | 915   | 3002     |
|        |       |                      |        |            | N540   | 2,35          | 36.3   | 790   | 2592     | 2,70         | 41.7   | 924   | 3031     |
|        |       |                      |        |            | N150   | 2,37          | 36.6   | 793   | 2602     | 2,69         | 41.5   | 870   | 2853     |
|        |       |                      |        |            | N550   | 2,58          | 39.8   | 790   | 2592     | 2,97         | 45.8   | 938   | 3077     |
| 7,0    | 108   | Scenar               | Lapua  | 78,0 3.071 | N160   | 2,78          | 42.9   | 790   | 2592     | 3,01         | 46.4   | 928   | 3045     |
|        |       |                      |        |            | N140   | 2,44          | 37.6   | 806   | 2644     | 2,64         | 40.8   | 880   | 2887     |
|        |       |                      |        |            | N540   | 2,50          | 38.6   | 827   | 2713     | 2,69         | 41.5   | 897   | 2943     |
|        |       |                      |        |            | N150   | 2,56          | 39.5   | 830   | 2723     | 2,69         | 41.5   | 870   | 2853     |
|        |       |                      |        |            | N550   | 2,72          | 42.0   | 853   | 2798     | 2,94         | 45.4   | 936   | 3070     |
| 7,0    | 108   | Silver Jacket Scenar | Lapua  | 80,0 3.150 | N160   | 3,04          | 46.9   | 849   | 2785     | 3,16         | 48.8   | 891   | 2923     |
|        |       |                      |        |            | N560   | 3,19          | 49.2   | 867   | 2843     | 3,42         | 52.7   | 939   | 3079     |
|        |       |                      |        |            | N165   | 3,16          | 48.8   | 860   | 2822     | 3,28F        | 50.7F  | 902   | 2959     |
|        |       |                      |        |            | N140   | 2,42          | 37.3   | 825   | 2707     | 2,68         | 41.3   | 893   | 2931     |
|        |       |                      |        |            | N540   | 2,52          | 38.9   | 827   | 2713     | 2,74         | 42.2   | 902   | 2958     |
| 7,8    | 120   | HPBT                 | Sierra | 76,8 3.024 | N150   | 2,49          | 38.4   | 819   | 2687     | 2,70         | 41.7   | 889   | 2917     |
|        |       |                      |        |            | N140   | 2,47          | 38.1   | 855   | 2805     | 2,63         | 40.5   | 852   | 2795     |
|        |       |                      |        |            | N540   | 2,49          | 38.4   | 773   | 2536     | 2,69         | 41.5   | 818   | 2684     |
|        |       |                      |        |            | N150   | 2,55          | 39.3   | 770   | 2526     | 2,71         | 41.7   | 839   | 2753     |
|        |       |                      |        |            | N550   | 2,63          | 40.6   | 800   | 2625     | 2,88         | 44.5   | 888   | 2914     |
| 8,0    | 123   | Scenar               | Lapua  | 80,0 3.150 | N160   | 2,97          | 45.8   | 825   | 2707     | 3,29         | 50.7   | 907   | 2975     |
|        |       |                      |        |            | N560   | 3,12          | 48.1   | 823   | 2700     | 3,41         | 52.7   | 932   | 3056     |
|        |       |                      |        |            | N140   | 2,35          | 36.3   | 738   | 2420     | 2,59         | 40.0   | 812   | 2663     |
|        |       |                      |        |            | N540   | 2,44          | 37.7   | 749   | 2456     | 2,68         | 41.4   | 827   | 2715     |
|        |       |                      |        |            | N150   | 2,47          | 38.1   | 743   | 2436     | 2,69         | 41.6   | 819   | 2686     |
| 8,0    | 123   | Silver Jacket Scenar | Lapua  | 80,0 3.150 | N150   | 2,40          | 37.0   | 780   | 2559     | 2,62         | 40.4   | 834   | 2738     |
|        |       |                      |        |            | N550   | 2,41          | 37.2   | 768   | 2520     | 2,73         | 42.1   | 857   | 2811     |
|        |       |                      |        |            | N160   | 2,75          | 42.4   | 792   | 2598     | 2,88         | 44.5   | 831   | 2726     |
|        |       |                      |        |            | N140   | 2,29          | 35.3   | 730   | 2395     | 2,64         | 40.7   | 812   | 2663     |
|        |       |                      |        |            | N540   | 2,32          | 35.8   | 749   | 2457     | 2,57         | 39.6   | 820   | 2690     |
| 8,4    | 130   | HPBT                 | Norma  | 80,0 3.150 | N150   | 2,32          | 35.8   | 710   | 2329     | 2,60         | 40.1   | 808   | 2651     |
|        |       |                      |        |            | N550   | 2,54          | 39.2   | 768   | 2520     | 2,84         | 43.8   | 852   | 2795     |
|        |       |                      |        |            | N160   | 2,79          | 43.0   | 764   | 2507     | 3,06         | 47.3   | 840   | 2757     |
|        |       |                      |        |            | N560   | 3,01          | 46.4   | 803   | 2635     | 3,25         | 50.2   | 878   | 2882     |
|        |       |                      |        |            | N150   | 2,28          | 35.2   | 704   | 2310     | 2,55         | 39.4   | 779   | 2555     |
| 9,0    | 139   | HPBT                 | Norma  | 78,0 3.071 | N550   | 2,50          | 38.6   | 743   | 2438     | 2,71         | 41.8   | 813   | 2667     |
|        |       |                      |        |            | N160   | 2,73          | 42.1   | 738   | 2421     | 2,98         | 46.0   | 810   | 2656     |
|        |       |                      |        |            | N560   | 2,88          | 44.4   | 753   | 2470     | 3,20         | 49.4   | 846   | 2777     |
|        |       |                      |        |            | N165   | 3,00          | 46.3   | 765   | 2510     | 3,23         | 49.9   | 833   | 2732     |
|        |       |                      |        |            | N150   | 2,17          | 33.5   | 673   | 2208     | 2,49         | 38.4   | 749   | 2458     |
| 9,0    | 139   | Scenar               | Lapua  | 80,0 3.150 | N550   | 2,45          | 37.8   | 724   | 2375     | 2,60         | 40.1   | 795   | 2608     |
|        |       |                      |        |            | N160   | 2,73          | 42.1   | 752   | 2467     | 2,92         | 45.1   | 813   | 2666     |
|        |       |                      |        |            | N560   | 2,87          | 44.3   | 767   | 2516     | 3,09         | 47.6   | 837   | 2746     |
|        |       |                      |        |            | N165   | 2,96          | 45.7   | 761   | 2497     | 3,22         | 49.8   | 829   | 2721     |
|        |       |                      |        |            | N550   | 2,37          | 36.6   | 712   | 2336     | 2,61         | 40.3   | 799   | 2622     |
| 9,0    | 139   | Silver Jacket Scenar | Lapua  | 80,0 3.150 | N160   | 2,54          | 39.2   | 748   | 2454     | 2,80         | 43.3   | 795   | 2610     |
|        |       |                      |        |            | N560   | 2,73          | 42.1   | 736   | 2415     | 3,06         | 47.3   | 826   | 2711     |
|        |       |                      |        |            | N150   | 2,08          | 32.1   | 671   | 2201     | 2,36         | 36.4   | 744   | 2441     |
| 9,1    | 140   | Naturalis            | Lapua  | 76,5 3.012 | N160   | 2,48          | 38.3   | 719   | 2359     | 2,79         | 43.1   | 791   | 2595     |
|        |       |                      |        |            | N560   | 2,76          | 42.6   | 736   | 2415     | 3,12         | 48.1   | 821   | 2694     |

F = Case full  
  = Accuracy load

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

## 6,5 x 55 Swedish Mauser

Test barrel: 630 mm (26½"), 1 in 8½" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 54,80 mm (2.157")

| Bullet |       |       |        |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|-------|--------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type  | Mfg    | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |       |        | [mm] [in.] |        |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    |
| 9,1    | 140   | HPBT  | Sierra | 79,0 3.110 | N150   | 2,35          | 36.3   | 703   | 2306     | 2,54         | 39.1   | 765   | 2511     |
|        |       |       |        |            | N550   | 2,58          | 39.8   | 749   | 2457     | 2,73         | 42.1   | 806   | 2644     |
|        |       |       |        |            | N160   | 2,81          | 43.4   | 759   | 2490     | 3,03         | 46.7   | 819   | 2687     |
|        |       |       |        |            | N560   | 2,93          | 45.2   | 779   | 2556     | 3,13         | 48.3   | 844   | 2770     |
| 9,3    | 144   | FMJBT | Lapua  | 79,0 3.110 | N165   | 3,00          | 46.3   | 766   | 2513     | 3,24         | 50.0   | 834   | 2735     |
|        |       |       |        |            | N150   | 2,04          | 31.5   | 659   | 2163     | 2,40         | 37.0   | 768   | 2520     |
|        |       |       |        |            | N160   | 2,64          | 40.7   | 717   | 2352     | 2,85         | 44.0   | 816   | 2677     |
|        |       |       |        |            | N560   | 2,91          | 44.8   | 756   | 2479     | 3,15         | 48.6   | 850   | 2789     |
| 10,0   | 155   | HPBT  | Sierra | 79,0 3.110 | N165   | 2,70          | 41.7   | 720   | 2362     | 3,18         | 49.1   | 837   | 2746     |
|        |       |       |        |            | N170   | 3,08          | 47.5   | 715   | 2346     | 3,41C        | 52.6C  | 815   | 2674     |
|        |       |       |        |            | N570   | 3,11          | 48.0   | 750   | 2461     | 3,22F        | 49.7F  | 785   | 2575     |
|        |       |       |        |            | N150   | 2,10          | 32.4   | 653   | 2142     | 2,33         | 36.0   | 711   | 2331     |
| 10,1   | 156   | Mega  | Lapua  | 73,0 2.874 | N550   | 2,36          | 36.4   | 689   | 2260     | 2,60         | 40.1   | 746   | 2447     |
|        |       |       |        |            | N160   | 2,64          | 40.7   | 698   | 2290     | 2,97         | 45.9   | 769   | 2522     |
|        |       |       |        |            | N560   | 2,66          | 41.0   | 702   | 2303     | 2,93         | 45.2   | 779   | 2556     |
|        |       |       |        |            | N165   | 2,75          | 42.4   | 690   | 2264     | 3,08         | 47.6   | 769   | 2522     |
| 10,1   | 156   | Mega  | Lapua  | 73,0 2.874 | N170   | 2,90          | 44.7   | 677   | 2221     | 3,32C        | 51.2C  | 779   | 2555     |
|        |       |       |        |            | N165   | 2,74          | 42.3   | 677   | 2222     | 3,17         | 49.0   | 755   | 2478     |
|        |       |       |        |            | N560   | 2,72          | 42.0   | 685   | 2248     | 3,11         | 48.0   | 773   | 2537     |
|        |       |       |        |            | N170   | 3,03          | 46.8   | 682   | 2238     | 3,32C        | 51.2C  | 746   | 2447     |
| 10,1   | 156   | Mega  | Lapua  | 73,0 2.874 | N570   | 3,02          | 46.6   | 730   | 2395     | 3,20F        | 49.4F  | 774   | 2539     |

C = Compressed load  
 F = Case full

## 6,5 - 284 Norma

Test barrel: 660 mm (26"), 1 in 9" twist  
 Primers: Large Rifle  
 Cases: LAPUA, trim-to length 54,90 mm (2.161")

| Bullet |       |                      |       |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|----------------------|-------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type                 | Mfg   | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |                      |       | [mm] [in.] |        |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    |
| 7,0    | 108   | Scenar               | Lapua | 79,0 3.110 | N550   | 2,97          | 45.8   | 920   | 3018     | 3,39         | 52.3   | 1027  | 3368     |
|        |       |                      |       |            | N160   | 3,08          | 47.5   | 906   | 2972     | 3,49         | 53.9   | 1008  | 3308     |
|        |       |                      |       |            | N560   | 3,47          | 53.5   | 927   | 3041     | 3,81         | 58.9   | 1031  | 3384     |
|        |       |                      |       |            | N165   | 3,52          | 54.3   | 922   | 3025     | 4,04         | 62.4   | 1042  | 3419     |
| 7,0    | 108   | Silver Jacket Scenar | Lapua | 79,0 3.110 | N160   | 3,11          | 48.0   | 883   | 2897     | 3,73         | 57.6   | 1002  | 3287     |
|        |       |                      |       |            | N560   | 3,51          | 54.2   | 911   | 2989     | 3,85         | 59.5   | 1023  | 3357     |
|        |       |                      |       |            | N165   | 3,61          | 55.7   | 919   | 3015     | 4,10         | 63.2   | 1033  | 3391     |
| 8,0    | 123   | Scenar               | Lapua | 79,0 3.110 | N160   | 2,59          | 40.0   | 795   | 2608     | 3,29         | 50.8   | 925   | 3035     |
|        |       |                      |       |            | N165   | 3,03          | 46.8   | 830   | 2723     | 3,65         | 56.4   | 947   | 3106     |
|        |       |                      |       |            | N560   | 3,28          | 50.6   | 867   | 2844     | 3,65         | 56.3   | 963   | 3158     |
| 8,0    | 123   | Silver Jacket Scenar | Lapua | 79,0 3.110 | N160   | 2,94          | 45.4   | 833   | 2733     | 3,38         | 52.2   | 935   | 3068     |
|        |       |                      |       |            | N560   | 3,37          | 52.0   | 872   | 2861     | 3,77         | 58.2   | 981   | 3218     |
|        |       |                      |       |            | N165   | 3,35          | 51.7   | 859   | 2818     | 3,98         | 61.5   | 971   | 3186     |
| 9,0    | 139   | Scenar               | Lapua | 79,0 3.110 | N160   | 2,80          | 43.2   | 772   | 2533     | 3,06         | 47.2   | 835   | 2740     |
|        |       |                      |       |            | N560   | 3,12          | 48.1   | 793   | 2602     | 3,63         | 56.0   | 919   | 3015     |
| 9,0    | 139   | Silver Jacket Scenar | Lapua | 79,0 3.110 | N160   | 2,60          | 40.1   | 758   | 2487     | 3,19         | 49.2   | 869   | 2851     |
|        |       |                      |       |            | N560   | 3,22          | 49.7   | 812   | 2664     | 3,53         | 54.5   | 904   | 2967     |
|        |       |                      |       |            | N165   | 3,02          | 46.6   | 793   | 2602     | 3,62         | 55.9   | 899   | 2948     |
| 9,3    | 144   | FMJBT                | Lapua | 79,0 3.110 | N160   | 2,80          | 43.2   | 783   | 2569     | 3,14         | 48.5   | 841   | 2759     |
|        |       |                      |       |            | N560   | 3,18          | 49.1   | 802   | 2631     | 3,43         | 52.9   | 876   | 2874     |
|        |       |                      |       |            | N165   | 2,90          | 44.7   | 766   | 2513     | 3,61         | 55.7   | 875   | 2871     |
|        |       |                      |       |            | N570   | 3,54          | 54.6   | 798   | 2618     | 3,70F        | 57.1F  | 830   | 2723     |

F = Case full

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



## .270 WSM

Test barrel: 520 mm (20½"), 1 in 9" twist  
 Primers: Large Rifle Magnum  
 Cases: Winchester, trim-to length 53,10 mm (2.091")

| Bullet |       |           |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,8    | 90    | HP        | Sierra | 68,6   | 2.701  | N160          | 4,00   | 61.7  | 1021     | 3350         | 4,47   | 69.0  | 1130     | 3707  |
|        |       |           |        |        |        | N560          | 4,39   | 67.7  | 1020     | 3346         | 4,78   | 73.8  | 1135     | 3724  |
|        |       |           |        |        |        | N165          | 4,59   | 70.8  | 1041     | 3415         | 4,75F  | 73.3F | 1083     | 3553  |
| 9,1    | 140   | XFB       | Barnes | 71,0   | 2.795  | N160          | 3,20   | 49.4  | 800      | 2625         | 3,71   | 57.2  | 899      | 2949  |
|        |       |           |        |        |        | N560          | 3,49   | 53.9  | 806      | 2644         | 3,93   | 60.6  | 918      | 3012  |
|        |       |           |        |        |        | N165          | 3,75   | 57.9  | 832      | 2730         | 4,10   | 63.3  | 913      | 2995  |
| 10,4   | 160   | Partition | Nosler | 71,0   | 2.795  | N160          | 3,20   | 49.4  | 737      | 2418         | 3,47   | 53.5  | 825      | 2707  |
|        |       |           |        |        |        | N560          | 3,36   | 51.8  | 774      | 2539         | 3,82   | 58.9  | 873      | 2864  |
|        |       |           |        |        |        | N165          | 3,30   | 50.9  | 769      | 2523         | 3,90   | 60.2  | 863      | 2831  |

F = Case full

## .270 Winchester

Test barrel: 620 mm (24½"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 64,30 mm (2.531")

| Bullet |       |               |           |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|-----------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg       | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |           | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | Spitzer       | Speer     | 80,0   | 3.150  | N150          | 2,88   | 44.5  | 898      | 2945         | 3,42   | 52.8  | 998      | 3273  |
|        |       |               |           |        |        | N160          | 3,80   | 58.6  | 953      | 3127         | 4,27C  | 65.8C | 1057     | 3468  |
|        |       |               |           |        |        | N165          | 4,00   | 61.7  | 966      | 3170         | 4,53C  | 69.9C | 1070     | 3509  |
| 8,4    | 130   | SP            | Remington | 82,0   | 3.228  | N160          | 3,34   | 51.5  | 847      | 2779         | 3,76   | 58.0  | 940      | 3083  |
|        |       |               |           |        |        | N560          | 3,64   | 56.2  | 876      | 2873         | 3,97   | 61.3  | 955      | 3132  |
|        |       |               |           |        |        | N165          | 3,54   | 54.6  | 850      | 2787         | 4,02   | 62.0  | 942      | 3089  |
| 9,7    | 150   | Ballistic Tip | Speer     | 83,0   | 3.268  | N165          | 2,92   | 45.1  | 730      | 2395         | 3,39   | 52.3  | 842      | 2762  |
|        |       |               | Nosler    | 83,5   | 3.287  | N160          | 2,92   | 45.1  | 730      | 2395         | 3,39   | 52.3  | 842      | 2762  |
|        |       |               | N560      | 3,13   | 48.3   | 742           | 2434   | 3,66  | 56.5     | 870          | 2854   |       |          |       |
| 10,4   | 160   | Partition     | Nosler    | 84,6   | 3.331  | N160          | 3,10   | 47.8  | 734      | 2408         | 3,74   | 57.7  | 870      | 2854  |
|        |       |               |           |        |        | N160          | 3,02   | 46.6  | 743      | 2438         | 3,48   | 53.8  | 826      | 2711  |
|        |       |               |           |        |        | N165          | 3,10   | 47.8  | 747      | 2451         | 3,64   | 56.2  | 837      | 2745  |

C = Compressed load

## .270 Weatherby Magnum

Test barrel: 650 mm (25½"), 1 in 12 twist  
 Primers: Large Rifle Magnum  
 Cases: Norma, trim-to length 64,50 mm (2.539")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |           |           |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|-----------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg       | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |           | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | PSP       | Remington | 79,0   | 3.110  | N550          | 4,33   | 66.8  | 1037     | 3401         | 4,64   | 71.7  | 1117     | 3666  |
|        |       |           |           |        |        | N160          | 4,60   | 71.0  | 1043     | 3421         | 4,85   | 74.9  | 1108     | 3634  |
|        |       |           |           |        |        | N165          | 5,08   | 78.4  | 1045     | 3428         | 5,38   | 83.0  | 1115     | 3658  |
| 8,5    | 130   | PSPCL     | Remington | 82,2   | 3.236  | N160          | 4,31   | 66.5  | 939      | 3080         | 4,61   | 71.1  | 1001     | 3284  |
|        |       |           |           |        |        | N165          | 4,62   | 71.3  | 931      | 3055         | 4,93   | 76.0  | 997      | 3270  |
|        |       |           |           |        |        | N560          | 4,71   | 72.7  | 947      | 3108         | 4,98   | 76.9  | 1004     | 3294  |
| 8,7    | 135   | HPBT      | Sierra    | 83,0   | 3.268  | N160          | 4,21   | 65.0  | 903      | 2964         | 4,43   | 68.3  | 965      | 3167  |
|        |       |           |           |        |        | N165          | 4,55   | 70.2  | 923      | 3029         | 4,70   | 72.5  | 989      | 3244  |
|        |       |           |           |        |        | N560          | 4,61   | 71.2  | 956      | 3137         | 4,81   | 74.2  | 1013     | 3323  |
| 9,7    | 150   | Partition | Nosler    | 82,5   | 3.248  | N165          | 4,34   | 67.0  | 877      | 2876         | 4,68   | 72.2  | 936      | 3072  |
|        |       |           |           |        |        | N560          | 4,38   | 67.6  | 900      | 2954         | 4,60   | 71.0  | 955      | 3134  |
|        |       |           |           |        |        | N170          | 4,76   | 73.4  | 886      | 2906         | 5,11   | 78.8  | 955      | 3134  |

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

## 7 mm-08 Remington

Test barrel: 610 mm (24"), 1 in 9½" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 51,50 mm (2.028")

| Bullet |       |               |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HP            | Hornady | 69,0   | 2.717  | N130          | 2,43   | 37.5  | 880      | 2886         | 2,74   | 42.2  | 975      | 3199  |
|        |       |               |         |        |        | N133          | 2,48   | 38.3  | 874      | 2868         | 2,95   | 45.4  | 992      | 3255  |
|        |       |               |         |        |        | N135          | 2,76   | 42.6  | 906      | 2971         | 3,04   | 46.9  | 1001     | 3284  |
| 7,8    | 120   | Spitzer       | Sierra  | 69,6   | 2.740  | N140          | 2,84   | 43.9  | 900      | 2953         | 3,16   | 48.7  | 1004     | 3293  |
|        |       |               |         |        |        | N150          | 2,94   | 45.3  | 907      | 2974         | 3,32C  | 51.2C | 1017     | 3336  |
|        |       |               |         |        |        | N135          | 2,60   | 40.1  | 826      | 2711         | 2,85   | 44.0  | 908      | 2978  |
| 9,1    | 140   | Ballistic Tip | Nosler  | 69,6   | 2.740  | N140          | 2,72   | 42.0  | 827      | 2714         | 3,04   | 46.9  | 929      | 3048  |
|        |       |               |         |        |        | N150          | 2,80   | 43.2  | 837      | 2747         | 3,15   | 48.6  | 935      | 3066  |
|        |       |               |         |        |        | N135          | 2,35   | 36.3  | 724      | 2374         | 2,61   | 40.3  | 807      | 2649  |
| 10,4   | 160   | SPBT          | Sierra  | 71,0   | 2.795  | N140          | 2,56   | 39.5  | 751      | 2464         | 2,70   | 41.7  | 837      | 2746  |
|        |       |               |         |        |        | N150          | 2,56   | 39.5  | 742      | 2434         | 2,72   | 42.0  | 814      | 2671  |
|        |       |               |         |        |        | N140          | 2,34   | 36.1  | 685      | 2248         | 2,73   | 42.2  | 784      | 2573  |
| 10,9   | 168   | HPBT          | Sierra  | 71,0   | 2.795  | N150          | 2,36   | 36.4  | 687      | 2253         | 2,77   | 42.7  | 775      | 2542  |
|        |       |               |         |        |        | N160          | 2,78   | 42.9  | 700      | 2297         | 3,25F  | 50.1F | 813      | 2667  |
|        |       |               |         |        |        | N150          | 2,22   | 34.3  | 672      | 2204         | 2,52   | 38.9  | 740      | 2428  |
| 11,3   | 175   | Mag-Tip       | Speer   | 71,0   | 2.795  | N550          | 2,38   | 36.8  | 696      | 2282         | 2,72   | 41.9  | 781      | 2561  |
|        |       |               |         |        |        | N160          | 2,55   | 39.3  | 640      | 2100         | 2,79F  | 43.0F | 700      | 2297  |
|        |       |               |         |        |        | N140          | 2,13   | 32.9  | 615      | 2018         | 2,45   | 37.8  | 694      | 2276  |
|        |       |               |         |        |        | N150          | 2,03   | 31.4  | 586      | 1923         | 2,39   | 36.9  | 675      | 2215  |
|        |       |               |         |        |        | N160          | 2,55   | 39.3  | 640      | 2100         | 2,90   | 44.8  | 728      | 2387  |

F = Case full

C = Compressed load

## 7 x 57

Test barrel: 550 mm (22"), 1 in 9½" twist  
 Primers: Large Rifle  
 Cases: Sako, trim-to length 56,80 mm (2.236")

| Bullet |       |               |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,8    | 120   | Spitzer       | Sierra | 76,5   | 3.012  | N135          | 2,67   | 41.1  | 814      | 2670         | 2,87   | 44.2  | 880      | 2887  |
|        |       |               |        |        |        | N140          | 2,82   | 43.5  | 824      | 2704         | 3,06   | 47.2  | 897      | 2942  |
|        |       |               |        |        |        | N150          | 2,85   | 44.0  | 828      | 2717         | 3,09   | 47.6  | 898      | 2946  |
| 9,1    | 140   | Ballistic Tip | Nosler | 77,5   | 3.051  | N140          | 2,58   | 39.7  | 736      | 2415         | 2,82   | 43.5  | 802      | 2630  |
|        |       |               |        |        |        | N150          | 2,65   | 40.9  | 747      | 2451         | 2,90   | 44.8  | 810      | 2657  |
|        |       |               |        |        |        | N150          | 2,50   | 38.6  | 691      | 2267         | 2,76   | 42.7  | 754      | 2474  |
| 10,4   | 160   | SPBT          | Sierra | 77,5   | 3.051  | N160          | 3,04   | 47.0  | 726      | 2381         | 3,26   | 50.3  | 793      | 2603  |
|        |       |               |        |        |        | N160          | 2,76   | 42.5  | 659      | 2162         | 3,06   | 47.1  | 726      | 2383  |
|        |       |               |        |        |        | N165          | 2,94   | 45.4  | 666      | 2184         | 3,32   | 51.2  | 740      | 2429  |

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

## 7 x 57R

Test barrel: 550 mm (22"), 1 in 9½" twist  
 Primers: Large Rifle  
 Cases: RWS, trim-to length 56,80 mm (2.236")

| Bullet |       |               |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,8    | 120   | Spitzer       | Sierra | 76,5   | 3.012  | N135          | 2,58   | 39.7  | 785      | 2574         | 2,79   | 43.1  | 857      | 2812  |
|        |       |               |        |        |        | N140          | 2,72   | 41.9  | 791      | 2594         | 2,97   | 45.8  | 870      | 2855  |
|        |       |               |        |        |        | N150          | 2,74   | 42.3  | 797      | 2613         | 3,00   | 46.3  | 873      | 2863  |
| 9,1    | 140   | Ballistic Tip | Nosler | 77,5   | 3.051  | N140          | 2,47   | 38.1  | 707      | 2320         | 2,74   | 42.2  | 777      | 2549  |
|        |       |               |        |        |        | N150          | 2,53   | 39.0  | 718      | 2354         | 2,81   | 43.4  | 787      | 2581  |
| 10,4   | 160   | SPBT          | Sierra | 77,5   | 3.051  | N150          | 2,39   | 36.8  | 662      | 2171         | 2,66   | 41.0  | 731      | 2397  |
|        |       |               |        |        |        | N160          | 2,93   | 45.2  | 693      | 2272         | 3,19   | 49.3  | 774      | 2539  |
| 11,3   | 175   | Mag-Tip       | Speer  | 77,0   | 3.031  | N160          | 2,63   | 40.6  | 629      | 2065         | 2,95   | 45.4  | 701      | 2298  |
|        |       |               |        |        |        | N165          | 2,78   | 42.8  | 631      | 2072         | 3,17   | 48.9  | 711      | 2333  |

## 7 x 64

Test barrel: 600 mm (23½"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Norma, trim-to length 63,80 mm (2.512")

| Bullet |       |           |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 9,0    | 139   | Interlock | Hornady | 82,8   | 3.260  | N140          | 2,61   | 40.3  | 753      | 2470         | 3,09   | 47.7  | 864      | 2835  |
|        |       |           |         |        |        | N550          | 3,16   | 48.8  | 824      | 2703         | 3,42   | 52.8  | 909      | 2982  |
|        |       |           |         |        |        | N160          | 3,23   | 49.8  | 811      | 2661         | 3,56   | 54.9  | 902      | 2959  |
| 10,4   | 160   | Naturalis | Lapua   | 84,0   | 3.307  | N160          | 2,65   | 40.9  | 713      | 2339         | 3,16   | 48.8  | 780      | 2559  |
|        |       |           |         |        |        | N560          | 3,20   | 49.4  | 744      | 2441         | 3,45   | 53.2  | 816      | 2677  |
| 10,4   | 160   | Partition | Nosler  | 84,0   | 3.307  | N560          | 3,31   | 51.1  | 767      | 2516         | 3,63   | 56.0  | 841      | 2759  |
|        |       |           |         |        |        | N165          | 3,39   | 52.3  | 744      | 2441         | 3,60   | 55.5  | 844      | 2769  |

## 7 mm Remington Magnum

Test barrel: 610 mm (24"), 1 in 9" twist  
 Primers: Large Rifle Magnum  
 Cases: LAPUA, trim-to length 63,30 mm (2.492")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |            |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type       | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |            |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HP         | Hornady | 81,0   | 3.189  | N160          | 4,70   | 72.6  | 1053     | 3455         | 5,07   | 78.2  | 1135     | 3722  |
|        |       |            |         |        |        | N560          | 4,78   | 73.8  | 1046     | 3431         | 5,29C  | 81.6C | 1146     | 3760  |
| 7,8    | 120   | Spitzer    | Sierra  | 83,0   | 3.268  | N160          | 4,48   | 69.2  | 971      | 3186         | 4,85   | 74.8  | 1048     | 3438  |
|        |       |            |         |        |        | N165          | 4,77   | 73.6  | 969      | 3179         | 5,17C  | 79.8C | 1053     | 3455  |
|        |       |            |         |        |        | N560          | 4,51   | 69.5  | 980      | 3215         | 5,09   | 78.5  | 1074     | 3524  |
| 9,4    | 145   | SPBT       | Speer   | 83,0   | 3.268  | N160          | 3,88   | 59.9  | 852      | 2795         | 4,30   | 66.3  | 927      | 3041  |
|        |       |            |         |        |        | N560          | 4,04   | 62.3  | 896      | 2941         | 4,46   | 68.8  | 977      | 3206  |
|        |       |            |         |        |        | N165          | 4,21   | 65.0  | 870      | 2854         | 4,62   | 71.4  | 945      | 3100  |
| 10,4   | 160   | Grand Slam | Speer   | 82,0   | 3.228  | N160          | 3,45   | 53.3  | 773      | 2536         | 3,91   | 60.4  | 850      | 2789  |
|        |       |            |         |        |        | N560          | 3,62   | 55.9  | 827      | 2713         | 4,14   | 63.9  | 860      | 2822  |
|        |       |            |         |        |        | N165          | 3,71   | 57.3  | 790      | 2593         | 4,22   | 65.1  | 871      | 2859  |
| 10,4   | 160   | Spitzer    | Sierra  | 82,0   | 3.228  | N160          | 3,74   | 57.7  | 814      | 2671         | 4,17   | 64.3  | 867      | 2844  |
|        |       |            |         |        |        | N165          | 3,52   | 54.2  | 771      | 2530         | 4,76   | 73.4  | 919      | 3015  |
|        |       |            |         |        |        | N560          | 3,86   | 59.5  | 832      | 2731         | 4,79   | 73.9  | 949      | 3114  |
| 10,9   | 168   | HPBT       | Sierra  | 83,5   | 3.287  | N560          | 3,93   | 60.6  | 819      | 2687         | 4,52   | 69.7  | 896      | 2940  |
|        |       |            |         |        |        | N165          | 3,97   | 61.3  | 798      | 2619         | 4,58   | 70.7  | 866      | 2841  |
|        |       |            |         |        |        | N170          | 4,39   | 67.8  | 812      | 2663         | 4,82   | 74.4  | 880      | 2887  |
| 11,3   | 175   | SBT        | Sierra  | 83,5   | 3.287  | N560          | 3,57   | 55.1  | 772      | 2533         | 4,14   | 63.9  | 874      | 2867  |
|        |       |            |         |        |        | N165          | 3,47   | 53.5  | 754      | 2474         | 4,17   | 64.3  | 845      | 2772  |
|        |       |            |         |        |        | N170          | 4,06   | 62.6  | 784      | 2573         | 4,67   | 72.1  | 851      | 2792  |

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

## 7 mm Weatherby Magnum

Test barrel: 660 mm, 1 in 9" twist  
 Primers: Large Rifle Magnum  
 Cases: Weatherby, trim-to length 64,50 mm (2.539")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |         |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HP      | Hornady | 81,5   | 3.209  | N160          | 4,76   | 73.5  | 1071     | 3512         | 5,10   | 78.7  | 1149     | 3770  |
|        |       |         |         |        |        | N560          | 4,98   | 76.8  | 1085     | 3561         | 5,30   | 81.8  | 1170     | 3839  |
| 7,8    | 120   | Spitzer | Sierra  | 82,5   | 3.248  | N160          | 4,52   | 69.8  | 989      | 3245         | 4,83   | 74.5  | 1057     | 3468  |
|        |       |         |         |        |        | N165          | 4,89   | 75.5  | 1003     | 3290         | 5,20   | 80.2  | 1072     | 3517  |
|        |       |         |         |        |        | N560          | 4,79   | 73.9  | 1009     | 3310         | 5,07   | 78.2  | 1079     | 3540  |
| 10,4   | 160   | Spitzer | Sierra  | 82,5   | 3.248  | N160          | 4,09   | 63.1  | 853      | 2799         | 4,39   | 67.7  | 912      | 2992  |
|        |       |         |         |        |        | N165          | 4,41   | 68.0  | 864      | 2834         | 4,69   | 72.4  | 924      | 3031  |
|        |       |         |         |        |        | N560          | 4,26   | 65.7  | 868      | 2846         | 4,53   | 69.9  | 927      | 3041  |
| 10,9   | 168   | HPBT    | Sierra  | 81,5   | 3.209  | N160          | 4,00   | 61.7  | 832      | 2730         | 4,23   | 65.3  | 879      | 2884  |
|        |       |         |         |        |        | N165          | 4,31   | 66.5  | 840      | 2755         | 4,51   | 69.6  | 888      | 2913  |
|        |       |         |         |        |        | N560          | 4,17   | 64.3  | 845      | 2771         | 4,42   | 68.2  | 909      | 2982  |

## .30 Carbine

Test barrel: 460 mm (18"), 1 in 10" twist  
 Primers: Small Rifle  
 Cases: Federal, trim-to length 32,60 mm (1.283")

| Bullet |       |         |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | Plinker | Speer | 42,5   | 1.673  | N110          | 0,88   | 13.6  | 610      | 2001         | 0,97   | 15.0  | 669      | 2196  |
|        |       |         |       |        |        | N110          | 0,79   | 12.1  | 545      | 1786         | 0,91   | 14.0  | 605      | 1983  |

## .30-30 Winchester

Test barrel: 510 mm (20"), 1 in 12" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 51,60 mm (2.031")

| Bullet |       |      |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,8    | 105   | HP   | Lapua | 64,5   | 2.539  | N120          | 1,48   | 22.8  | 692      | 2271         | 1,73   | 26.8  | 781      | 2562  |
|        |       |      |       |        |        | N130          | 1,70   | 26.3  | 710      | 2329         | 1,95   | 30.1  | 800      | 2623  |
|        |       |      |       |        |        | N133          | 1,86   | 28.7  | 730      | 2395         | 2,19   | 33.8  | 833      | 2732  |
| 8,5    | 130   | FSP  | Speer | 64,7   | 2.547  | N120          | 1,41   | 21.7  | 617      | 2024         | 1,67   | 25.8  | 705      | 2314  |
|        |       |      |       |        |        | N130          | 1,59   | 24.5  | 641      | 2103         | 1,84   | 28.4  | 728      | 2389  |
|        |       |      |       |        |        | N133          | 1,71   | 26.4  | 653      | 2143         | 1,97   | 30.4  | 741      | 2432  |
|        |       |      |       |        |        | N135          | 1,80   | 27.7  | 649      | 2129         | 2,08   | 32.0  | 737      | 2419  |
|        |       |      |       |        |        | N130          | 1,43   | 22.1  | 558      | 1831         | 1,65   | 25.4  | 631      | 2070  |
| 9,7    | 150   | FSP  | Speer | 64,5   | 2.539  | N120          | 1,23   | 19.1  | 519      | 1701         | 1,46   | 22.5  | 593      | 1946  |
|        |       |      |       |        |        | N130          | 1,43   | 22.1  | 558      | 1831         | 1,65   | 25.4  | 631      | 2070  |
|        |       |      |       |        |        | N133          | 1,48   | 22.8  | 560      | 1839         | 1,72   | 26.5  | 636      | 2086  |
|        |       |      |       |        |        | N135          | 1,71   | 26.4  | 587      | 1927         | 1,93   | 29.7  | 660      | 2165  |
|        |       |      |       |        |        | N140          | 1,85   | 28.5  | 596      | 1956         | 2,06   | 31.8  | 672      | 2203  |
|        |       |      |       |        |        | N130          | 1,34   | 20.7  | 516      | 1692         | 1,60   | 24.7  | 598      | 1962  |
| 11,0   | 170   | FSP  | Speer | 64,5   | 2.539  | N133          | 1,42   | 21.9  | 511      | 1678         | 1,67   | 25.8  | 589      | 1931  |
|        |       |      |       |        |        | N135          | 1,58   | 24.4  | 536      | 1759         | 1,80   | 27.7  | 604      | 1981  |
|        |       |      |       |        |        | N130          | 1,66   | 25.5  | 533      | 1747         | 1,89   | 29.2  | 610      | 2002  |

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

# .300 Savage

Test barrel: 600 mm (23½"), twist 12"  
Primers: Large Rifle  
Cases: Remington, trim to-length 47,30 mm (1.862")

| Bullet |       |        |        | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|--------|--------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg    | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |        |        | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HP     | Lapua  | 62,5   | 2.461         | N120 | 2,19   | 33.9  | 878          | 2881  | 2,45   | 37.8  | 975      | 3199  |
|        |       |        |        |        |               | N130 | 2,41   | 37.1  | 912          | 2993  | 2,59   | 40.0  | 986      | 3235  |
|        |       |        |        |        |               | N133 | 2,59   | 39.9  | 894          | 2932  | 2,85   | 44.0  | 973      | 3192  |
| 8,1    | 125   | TNT-HP | Speer  | 65,5   | 2.579         | N120 | 2,06   | 31.8  | 764          | 2507  | 2,27   | 35.0  | 837      | 2746  |
|        |       |        |        |        |               | N130 | 2,21   | 34.1  | 794          | 2606  | 2,42   | 37.3  | 863      | 2831  |
|        |       |        |        |        |               | N133 | 2,53   | 39.1  | 822          | 2698  | 2,71   | 41.8  | 884      | 2900  |
| 9,7    | 150   | Mega   | Lapua  | 61,5   | 2.421         | N130 | 1,89   | 29.2  | 684          | 2243  | 2,18   | 33.6  | 751      | 2464  |
|        |       |        |        |        |               | N135 | 2,24   | 34.6  | 706          | 2315  | 2,50   | 38.6  | 772      | 2533  |
|        |       |        |        |        |               | N140 | 2,44   | 37.6  | 719          | 2360  | 2,72   | 42.0  | 793      | 2602  |
| 10,7   | 165   | SBT    | Sierra | 66,0   | 2.598         | N133 | 2,20   | 33.9  | 690          | 2264  | 2,42   | 37.3  | 759      | 2490  |
|        |       |        |        |        |               | N135 | 2,35   | 36.2  | 700          | 2297  | 2,53   | 39.0  | 764      | 2507  |
|        |       |        |        |        |               | N140 | 2,46   | 37.9  | 713          | 2341  | 2,68   | 41.4  | 787      | 2582  |
| 12,0   | 185   | Mega   | Lapua  | 66,0   | 2.598         | N135 | 2,15   | 33.2  | 631          | 2072  | 2,44   | 37.6  | 705      | 2313  |
|        |       |        |        |        |               | N140 | 2,30   | 35.5  | 649          | 2131  | 2,59   | 40.0  | 715      | 2346  |
|        |       |        |        |        |               | N540 | 2,36   | 36.4  | 644          | 2113  | 2,66   | 41.0  | 720      | 2362  |

# .308 Winchester

Test barrel: 610 mm (24"), 1 in 12" twist  
Primers: Large Rifle  
Cases: Lapua, trim-to length 51,00 mm (2.008")

| Bullet |       |                   |        | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|-------------------|--------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type              | Mfg    | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |                   |        | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 3,7    | 57    | ALS <sup>1)</sup> | Lapua  | 67,0   | 2.638         | N110 | 1,78   | 27.5  | 1061         | 3481  | 2,24   | 34.5  | 1217     | 3993  |
| 6,5    | 100   | HPCE              | Lapua  | 67,0   | 2.638         | N110 | 1,32   | 20.4  | 711          | 2333  | 1,80   | 27.8  | 870      | 2854  |
|        |       |                   |        |        |               | N120 | 1,98   | 30.6  | 812          | 2663  | 2,33   | 36.0  | 930      | 3051  |
|        |       |                   |        |        |               | N130 | 2,18   | 33.7  | 852          | 2794  | 2,60   | 40.1  | 976      | 3203  |
|        |       |                   |        |        |               | N135 | 2,47   | 38.1  | 865          | 2837  | 2,99   | 46.1  | 992      | 3255  |
| 6,5    | 100   | FMJ Cutting Edge  | Lapua  | 67,0   | 2.638         | N133 | 2,63   | 40.6  | 918          | 3012  | 2,95F  | 45.5F | 1023     | 3356  |
|        |       |                   |        |        |               | N530 | 2,68   | 41.4  | 915          | 3002  | 3,01   | 46.5  | 1044     | 3425  |
| 7,1    | 110   | HP                | Sako   | 67,5   | 2.657         | N120 | 2,32   | 35.8  | 844          | 2769  | 2,67   | 41.2  | 962      | 3157  |
|        |       |                   |        |        |               | N130 | 2,52   | 38.9  | 862          | 2826  | 2,96   | 45.7  | 988      | 3242  |
|        |       |                   |        |        |               | N133 | 2,73   | 42.1  | 874          | 2868  | 3,19   | 49.1  | 1009     | 3311  |
| 8,0    | 123   | FMJ               | Lapua  | 66,9   | 2.634         | N130 | 2,26   | 34.9  | 782          | 2566  | 2,78   | 42.9  | 923      | 3028  |
|        |       |                   |        |        |               | N133 | 2,62   | 40.4  | 858          | 2815  | 2,87   | 44.3  | 940      | 3084  |
|        |       |                   |        |        |               | N530 | 2,59   | 40.0  | 850          | 2789  | 2,88   | 44.4  | 959      | 3146  |
|        |       |                   |        |        |               | N135 | 2,72   | 42.0  | 830          | 2723  | 3,06F  | 47.2F | 921      | 3022  |
| 8,1    | 125   | Ballistic Tip     | Nosler | 70,0   | 2.756         | N130 | 2,40   | 37.0  | 818          | 2684  | 2,79   | 43.0  | 935      | 3068  |
|        |       |                   |        |        |               | N133 | 2,60   | 40.1  | 829          | 2721  | 3,00   | 46.3  | 951      | 3120  |
|        |       |                   |        |        |               | N135 | 2,70   | 41.6  | 833          | 2732  | 3,17   | 48.9  | 958      | 3143  |
|        |       |                   |        |        |               | N140 | 2,86   | 44.1  | 835          | 2739  | 3,23F  | 49.8F | 936      | 3071  |
| 8,5    | 130   | HP                | Lapua  | 68,0   | 2.677         | N135 | 2,58   | 39.7  | 782          | 2567  | 3,02   | 46.7  | 907      | 2975  |
|        |       |                   |        |        |               | N140 | 2,75   | 42.4  | 786          | 2579  | 3,15   | 48.7  | 903      | 2963  |
| 9,7    | 150   | Mega              | Lapua  | 65,2   | 2.795         | N135 | 2,05   | 31.6  | 664          | 2178  | 2,55   | 39.3  | 789      | 2588  |
|        |       |                   |        |        |               | N140 | 2,09   | 32.2  | 653          | 2142  | 2,67   | 41.2  | 791      | 2596  |
|        |       |                   |        |        |               | N540 | 2,26   | 34.9  | 671          | 2201  | 2,80   | 43.2  | 803      | 2635  |
| 9,7    | 150   | SPBT              | Sierra | 70,0   | 2.756         | N133 | 2,27   | 35.0  | 729          | 2391  | 2,86   | 44.1  | 863      | 2831  |
|        |       |                   |        |        |               | N135 | 2,56   | 39.5  | 764          | 2505  | 2,96   | 45.7  | 871      | 2857  |
|        |       |                   |        |        |               | N140 | 2,71   | 41.8  | 767          | 2516  | 3,05   | 47.1  | 858      | 2815  |
|        |       |                   |        |        |               | N150 | 2,82   | 43.6  | 776          | 2545  | 3,23   | 49.9  | 878      | 2880  |

<sup>1)</sup> A muzzle velocity exceeding 1000 m/s ( 3300 fps) may lead to severe barrel fouling!

F = Full case

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

# .308 Winchester

Test barrel: 610 mm (24"), 1 in 12" twist  
Primers: Large Rifle  
Cases: Lapua, trim-to length 51,00 mm (2.008")

| Bullet |       |                      |               | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|----------------------|---------------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type                 | Mfg           | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |                      |               | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 9,7    | 150   | Lock Base            | Lapua         | 70,0   | 2.756         | N530 | 2,45   | 37.8  | 794          | 2605  | 2,76   | 42.6  | 892      | 2927  |
|        |       |                      |               |        |               | N135 | 2,56   | 39.5  | 810          | 2657  | 2,83   | 43.7  | 885      | 2904  |
|        |       |                      |               |        |               | N140 | 2,75   | 42.4  | 800          | 2625  | 2,90F  | 44.7F | 853      | 2799  |
|        |       |                      |               |        |               | N150 | 2,80   | 43.2  | 803          | 2635  | 2,93F  | 45.2F | 835      | 2740  |
| 9,7    | 150   | HPBT                 | Sierra        | 71,0   | 2.795         | N140 | 2,62   | 40.4  | 752          | 2467  | 3,06   | 47.3  | 869      | 2851  |
|        |       |                      |               |        |               | N540 | 2,71   | 41.8  | 758          | 2487  | 3,13   | 48.3  | 901      | 2956  |
|        |       |                      |               |        |               | N150 | 2,74   | 42.2  | 776          | 2545  | 3,14C  | 48.4C | 874      | 2869  |
| 9,72   | 150   | FMJBT                | Lapua         | 70,0   | 2.756         | N540 | 2,88   | 44.5  | 772          | 2534  | 3,26F  | 50.3F | 870      | 2855  |
| 10,0   | 155   | Scenar               | Lapua         | 71,0   | 2.795         | N530 | 2,24   | 34.6  | 727          | 2385  | 2,66   | 41.0  | 844      | 2769  |
|        |       |                      |               |        |               | N135 | 2,23   | 34.4  | 687          | 2254  | 2,64   | 40.7  | 804      | 2638  |
|        |       |                      |               |        |               | N140 | 2,38   | 36.7  | 686          | 2251  | 2,81   | 43.4  | 807      | 2648  |
|        |       |                      |               |        |               | N540 | 2,63   | 40.6  | 781          | 2562  | 2,91   | 44.9  | 884      | 2900  |
| 10,0   | 155   | Silver Jacket Scenar | Lapua         | 71,0   | 2.795         | N150 | 2,53   | 39.0  | 719          | 2359  | 3,03   | 46.8  | 818      | 2683  |
|        |       |                      |               |        |               | N140 | 2,66   | 41.0  | 767          | 2516  | 2,95   | 45.5  | 855      | 2805  |
|        |       |                      |               |        |               | N540 | 2,64   | 40.7  | 760          | 2494  | 3,05   | 47.1  | 870      | 2854  |
|        |       |                      |               |        |               | N150 | 2,71   | 41.8  | 782          | 2566  | 3,05   | 47.1  | 867      | 2844  |
| 10,0   | 155   | HPBT                 | Sierra        | 71,0   | 2.795         | N135 | 2,28   | 35.1  | 712          | 2337  | 2,68   | 41.3  | 815      | 2674  |
|        |       |                      |               |        |               | N140 | 2,40   | 37.0  | 717          | 2354  | 2,86   | 44.2  | 827      | 2712  |
|        |       |                      |               |        |               | N540 | 2,46   | 37.9  | 712          | 2337  | 2,92   | 45.1  | 838      | 2750  |
|        |       |                      |               |        |               | N150 | 2,63   | 40.6  | 752          | 2466  | 3,01   | 46.5  | 850      | 2790  |
|        |       |                      |               |        |               | N550 | 2,76   | 42.5  | 756          | 2479  | 3,22C  | 49.7C | 880      | 2888  |
| 10,7   | 165   | SPBT                 | Speer         | 71,0   | 2.795         | N133 | 2,38   | 36.8  | 715          | 2345  | 2,72   | 41.9  | 809      | 2653  |
|        |       |                      |               |        |               | N135 | 2,48   | 38.3  | 724          | 2376  | 2,86   | 44.1  | 824      | 2703  |
|        |       |                      |               |        |               | N140 | 2,60   | 40.1  | 729          | 2390  | 3,00   | 46.3  | 838      | 2750  |
|        |       |                      |               |        |               | N150 | 2,66   | 41.0  | 735          | 2411  | 3,10   | 47.9  | 842      | 2761  |
|        |       |                      |               |        |               | N550 | 2,86   | 44.1  | 760          | 2495  | 3,19   | 49.3  | 850      | 2789  |
| 10,9   | 167   | Scenar               | Lapua         | 71,0   | 2.795         | N135 | 2,38   | 36.7  | 739          | 2425  | 2,59   | 40.0  | 813      | 2667  |
|        |       |                      |               |        |               | N140 | 2,59   | 40.0  | 718          | 2356  | 2,85   | 44.0  | 801      | 2628  |
|        |       |                      |               |        |               | N540 | 2,58   | 39.8  | 733          | 2405  | 2,85   | 44.0  | 811      | 2661  |
|        |       |                      |               |        |               | N150 | 2,71   | 41.8  | 747          | 2451  | 2,90   | 44.8  | 836      | 2744  |
|        |       |                      |               |        |               | N550 | 2,88   | 44.4  | 763          | 2503  | 3,17F  | 48.9F | 836      | 2743  |
| 10,9   | 167   | Silver Jacket Scenar | Lapua         | 71,0   | 2.795         | N140 | 2,61   | 40.2  | 743          | 2437  | 2,80   | 43.2  | 828      | 2717  |
|        |       |                      |               |        |               | N150 | 2,64   | 40.7  | 737          | 2418  | 2,97   | 45.8  | 828      | 2717  |
|        |       |                      |               |        |               | N540 | 2,62   | 40.5  | 732          | 2401  | 3,00   | 46.3  | 837      | 2746  |
| 10,9   | 168   | HPBT                 | Sierra        | 71,0   | 2.795         | N135 | 2,47   | 38.1  | 747          | 2451  | 2,73   | 42.1  | 822      | 2697  |
|        |       |                      |               |        |               | N140 | 2,35   | 36.2  | 685          | 2247  | 2,78   | 42.8  | 780      | 2558  |
|        |       |                      |               |        |               | N540 | 2,44   | 37.7  | 691          | 2266  | 2,89   | 44.5  | 809      | 2654  |
|        |       |                      |               |        |               | N150 | 2,50   | 38.6  | 707          | 2321  | 2,88   | 44.5  | 804      | 2636  |
|        |       |                      |               |        |               | N550 | 2,70   | 41.6  | 725          | 2379  | 3,06   | 47.2  | 832      | 2729  |
| 11,0   | 170   | LockBase             | Lapua         | 71,0   | 2.795         | N135 | 2,42   | 37.4  | 710          | 2328  | 2,78   | 42.9  | 806      | 2645  |
|        |       |                      |               |        |               | N140 | 2,56   | 39.5  | 715          | 2345  | 2,95   | 45.5  | 822      | 2696  |
|        |       |                      |               |        |               | N540 | 2,60   | 40.1  | 703          | 2308  | 3,00   | 46.3  | 842      | 2762  |
|        |       |                      |               |        |               | N150 | 2,61   | 40.2  | 720          | 2361  | 2,95   | 45.5  | 833      | 2734  |
|        |       |                      |               |        |               | N550 | 2,77   | 42.8  | 719          | 2360  | 3,14   | 48.5  | 845      | 2772  |
| 11,3   | 175   | HPBT/VLD             | Sierra/Berger | 71,0   | 2.795         | N140 | 2,29   | 35.3  | 664          | 2177  | 2,68   | 41.4  | 762      | 2501  |
|        |       |                      |               |        |               | N540 | 2,44   | 37.7  | 687          | 2253  | 2,79   | 43.1  | 788      | 2586  |
|        |       |                      |               |        |               | N150 | 2,39   | 36.8  | 681          | 2236  | 2,82   | 43.5  | 784      | 2573  |
|        |       |                      |               |        |               | N550 | 2,57   | 39.6  | 698          | 2290  | 2,97   | 45.8  | 802      | 2631  |

F = Full case

C = Compressed load

■ = Accuracy load

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



### .308 Winchester

Test barrel: 610 mm (24"), 1 in 12" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 51,00 mm (2.008")

| Bullet |       |                      |         | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|----------------------|---------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type                 | Mfg     | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |                      |         | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 11,7   | 180   | SP                   | Hornady | 71,0   | 2.795         | N135 | 2,33   | 36.0  | 661          | 2169  | 2,71   | 41.8  | 765      | 2510  |
|        |       |                      |         |        |               | N140 | 2,47   | 38.1  | 669          | 2196  | 2,86   | 44.1  | 781      | 2561  |
|        |       |                      |         |        |               | N150 | 2,48   | 38.3  | 677          | 2220  | 3,00   | 46.3  | 793      | 2601  |
| 11,7   | 180   | XFB                  | Barnes  | 71,0   | 2.795         | N540 | 2,09   | 32.2  | 591          | 1938  | 2,55   | 39.3  | 715      | 2346  |
|        |       |                      |         |        |               | N550 | 2,30   | 35.5  | 623          | 2043  | 2,75   | 42.4  | 734      | 2408  |
|        |       |                      |         |        |               | N140 | 2,60   | 40.1  | 707          | 2320  | 2,84   | 43.8  | 772      | 2533  |
| 11,7   | 180   | Naturalis            | Lapua   | 68,1   | 2.681         | N540 | 2,63   | 40.6  | 703          | 2306  | 2,90   | 44.7  | 769      | 2523  |
|        |       |                      |         |        |               | N150 | 2,75   | 42.4  | 727          | 2385  | 2,95   | 45.5  | 778      | 2552  |
|        |       |                      |         |        |               | N550 | 2,84   | 43.8  | 716          | 2349  | 3,13   | 48.3  | 791      | 2595  |
| 12,0   | 185   | Mega                 | Lapua   | 67,5   | 2.657         | N135 | 2,39   | 36.9  | 673          | 2208  | 2,57   | 39.7  | 731      | 2398  |
|        |       |                      |         |        |               | N140 | 2,53   | 39.0  | 675          | 2215  | 2,82   | 43.5  | 756      | 2480  |
|        |       |                      |         |        |               | N150 | 2,65   | 40.9  | 688          | 2257  | 2,93   | 45.2  | 756      | 2480  |
| 12,0   | 185   | FMJBT                | Lapua   | 71,0   | 2.795         | N550 | 2,76   | 42.6  | 685          | 2247  | 3,07   | 47.4  | 768      | 2520  |
|        |       |                      |         |        |               | N135 | 2,33   | 36.0  | 667          | 2188  | 2,66   | 41.0  | 761      | 2495  |
|        |       |                      |         |        |               | N140 | 2,44   | 37.6  | 675          | 2215  | 2,83   | 43.7  | 778      | 2551  |
| 12,0   | 185   | Scenar               | Lapua   | 71,0   | 2.795         | N540 | 2,54   | 39.2  | 712          | 2335  | 2,84   | 43.8  | 791      | 2595  |
|        |       |                      |         |        |               | N140 | 2,44   | 37.7  | 706          | 2316  | 2,69   | 41.5  | 778      | 2552  |
|        |       |                      |         |        |               | N540 | 2,38   | 36.7  | 725          | 2379  | 2,76   | 42.6  | 801      | 2628  |
| 12,0   | 185   | Silver Jacket Scenar | Lapua   | 71,0   | 2.795         | N150 | 2,42   | 37.3  | 664          | 2179  | 2,72   | 42.0  | 785      | 2575  |
|        |       |                      |         |        |               | N550 | 2,62   | 40.5  | 672          | 2203  | 3,04   | 46.9  | 795      | 2608  |
|        |       |                      |         |        |               | N140 | 2,46   | 38.0  | 689          | 2259  | 2,77   | 42.7  | 776      | 2546  |
| 12,3   | 190   | HPBT                 | Sierra  | 71,0   | 2.795         | N150 | 2,47   | 38.1  | 696          | 2283  | 2,80   | 43.2  | 782      | 2566  |
|        |       |                      |         |        |               | N550 | 2,72   | 41.9  | 711          | 2331  | 3,06   | 47.2  | 811      | 2661  |
|        |       |                      |         |        |               | N140 | 2,42   | 37.3  | 677          | 2222  | 2,78   | 42.9  | 764      | 2508  |
| 13,0   | 200   | SP                   | Speer   | 71,0   | 2.795         | N540 | 2,44   | 37.6  | 672          | 2204  | 2,83   | 43.7  | 786      | 2579  |
|        |       |                      |         |        |               | N150 | 2,49   | 38.4  | 676          | 2218  | 2,82   | 43.6  | 767      | 2516  |
|        |       |                      |         |        |               | N550 | 2,63   | 40.6  | 695          | 2279  | 3,06   | 47.2  | 800      | 2624  |
| N140   | 2,28  | 35.2                 | 609     | 1999   | 2,67          | 41.2 | 712    | 2335  |              |       |        |       |          |       |
| N150   | 2,24  | 34.5                 | 604     | 1982   | 2,74          | 42.2 | 715    | 2344  |              |       |        |       |          |       |

= Accuracy load

### 7,62 x 53R (7,62 Russian)

Test barrel: 660 mm (26"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 53,30 mm (2.098")

| Bullet |       |        |       | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|--------|-------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg   | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |        |       | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 8,0    | 123   | FMJ    | Lapua | 68,5   | 2.697         | N130 | 2,81   | 43.3  | 883          | 2896  | 3,19   | 49.1  | 967      | 3171  |
|        |       |        |       |        |               | N133 | 3,07   | 47.4  | 900          | 2954  | 3,41   | 52.6  | 978      | 3209  |
|        |       |        |       |        |               | N135 | 3,19   | 49.2  | 901          | 2956  | 3,50   | 54.0  | 984      | 3229  |
| 9,7    | 150   | Mega   | Lapua | 70,9   | 2.791         | N133 | 2,43   | 37.5  | 727          | 2384  | 2,83   | 43.6  | 826      | 2709  |
|        |       |        |       |        |               | N135 | 2,70   | 41.7  | 761          | 2497  | 3,05   | 47.1  | 851      | 2790  |
|        |       |        |       |        |               | N140 | 2,86   | 44.1  | 774          | 2540  | 3,19   | 49.2  | 862      | 2829  |
| 10,0   | 155   | Scenar | Lapua | 75,5   | 2.972         | N135 | 2,74   | 42.3  | 786          | 2579  | 3,02   | 46.7  | 865      | 2839  |
|        |       |        |       |        |               | N140 | 2,90   | 44.8  | 800          | 2625  | 3,19   | 49.3  | 884      | 2900  |
|        |       |        |       |        |               | N150 | 2,99   | 46.2  | 803          | 2635  | 3,15   | 48.6  | 886      | 2906  |
| 10,1   | 156   | SPBT   | Sako  | 70,5   | 2.776         | N135 | 2,89   | 44.6  | 789          | 2589  | 3,18   | 49.0  | 866      | 2840  |
|        |       |        |       |        |               | N140 | 3,01   | 46.5  | 796          | 2612  | 3,19   | 49.2  | 845      | 2772  |
|        |       |        |       |        |               | N150 | 3,16   | 48.7  | 809          | 2655  | 3,33   | 51.4  | 857      | 2812  |

= Accuracy load

LIGHT GREY TEXT BOX 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 (26"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 53,30 mm (2.098")

| Bullet |       |           |        | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|-----------|--------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 10,9   | 167   | Scenar    | Lapua  | 75,0   | 2.953         | N140 | 3,00   | 46.3  | 784          | 2573  | 3,10   | 47.8  | 830      | 2723  |
|        |       |           |        |        |               | N540 | 2,94   | 45.3  | 774          | 2541  | 3,12   | 48.1  | 812      | 2664  |
|        |       |           |        |        |               | N150 | 3,12   | 48.1  | 790          | 2590  | 3,27   | 50.5  | 834      | 2736  |
| 10,9   | 168   | HPBT      | Sierra | 75,6   | 2.976         | N550 | 3,21   | 49.5  | 797          | 2616  | 3,40   | 52.5  | 840      | 2756  |
|        |       |           |        |        |               | N140 | 2,94   | 45.4  | 775          | 2541  | 3,18   | 49.1  | 830      | 2723  |
|        |       |           |        |        |               | N540 | 3,03   | 46.7  | 787          | 2581  | 3,12   | 48.1  | 812      | 2664  |
| 11,7   | 180   | Naturalis | Lapua  | 72,5   | 2.854         | N150 | 3,08   | 47.5  | 790          | 2591  | 3,27   | 50.5  | 834      | 2736  |
|        |       |           |        |        |               | N550 | 3,26   | 50.3  | 804          | 2638  | 3,40   | 52.5  | 840      | 2756  |
|        |       |           |        |        |               | N140 | 2,80   | 43.2  | 708          | 2323  | 3,07   | 47.4  | 781      | 2562  |
| 12,0   | 185   | Scenar    | Lapua  | 75,0   | 2.953         | N540 | 2,85   | 44.0  | 714          | 2343  | 3,10   | 47.8  | 789      | 2589  |
|        |       |           |        |        |               | N150 | 2,81   | 43.4  | 708          | 2323  | 3,10   | 47.8  | 782      | 2566  |
|        |       |           |        |        |               | N550 | 3,10   | 47.8  | 721          | 2365  | 3,40   | 52.5  | 813      | 2667  |
| 12,0   | 185   | Mega      | Lapua  | 70,0   | 2.756         | N135 | 2,74   | 42.2  | 727          | 2384  | 2,98   | 46.0  | 795      | 2609  |
|        |       |           |        |        |               | N140 | 2,87   | 44.3  | 741          | 2429  | 3,03   | 46.8  | 787      | 2581  |
|        |       |           |        |        |               | N540 | 2,84   | 43.9  | 741          | 2431  | 3,14   | 48.5  | 818      | 2684  |
| 12,0   | 185   | HPBT      | Lapua  | 70,0   | 2.756         | N150 | 2,98   | 45.9  | 742          | 2434  | 3,24   | 50.0  | 815      | 2674  |
|        |       |           |        |        |               | N550 | 3,03   | 46.7  | 747          | 2452  | 3,41   | 52.6  | 847      | 2779  |
|        |       |           |        |        |               | N140 | 2,80   | 43.2  | 708          | 2324  | 3,12   | 48.1  | 788      | 2585  |
| 13,0   | 200   | FMJBT     | Lapua  | 76,0   | 2.992         | N540 | 2,87   | 44.4  | 720          | 2363  | 3,17   | 48.9  | 799      | 2621  |
|        |       |           |        |        |               | N150 | 2,92   | 45.1  | 718          | 2355  | 3,20   | 49.4  | 792      | 2598  |
|        |       |           |        |        |               | N550 | 3,13   | 48.3  | 746          | 2446  | 3,47   | 53.5  | 835      | 2740  |
| 13,0   | 200   | HPBT      | Sierra | 77,1   | 3.035         | N140 | 2,36   | 36.4  | 635          | 2083  | 2,59   | 40.0  | 709      | 2326  |
|        |       |           |        |        |               | N540 | 2,47   | 38.1  | 656          | 2152  | 2,69   | 41.5  | 720      | 2362  |
|        |       |           |        |        |               | N150 | 2,36   | 36.4  | 641          | 2103  | 2,64   | 40.7  | 711      | 2333  |
| 14,3   | 220   | HPBT      | Sierra | 77,1   | 3.035         | N140 | 2,72   | 42.0  | 698          | 2292  | 3,07   | 47.4  | 779      | 2556  |
|        |       |           |        |        |               | N540 | 2,75   | 42.4  | 703          | 2306  | 3,06   | 47.2  | 779      | 2556  |
|        |       |           |        |        |               | N150 | 2,83   | 43.6  | 706          | 2316  | 3,14   | 48.5  | 781      | 2562  |
| 14,3   | 220   | HPBT      | Sierra | 77,1   | 3.035         | N550 | 3,04   | 46.8  | 728          | 2389  | 3,34   | 51.5  | 807      | 2648  |
|        |       |           |        |        |               | N540 | 2,63   | 40.6  | 656          | 2151  | 2,87   | 44.3  | 728      | 2388  |
|        |       |           |        |        |               | N150 | 2,61   | 40.3  | 639          | 2095  | 2,96   | 45.7  | 728      | 2388  |
| N550   | 2,84  | 43.9      | 675    | 2215   | 3,12          | 48.1 | 753    | 2470  |              |       |        |       |          |       |

= Accuracy load

### 7,5 x 55 Swiss GP31

Test barrel: 600 mm (23½"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Norma, trim-to length 55,40 mm (2.181")

| Bullet |       |        |       | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|--------|-------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg   | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |        |       | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | Scenar | Lapua | 75,5   | 2.972         | N140 | 3,00   | 46.3  | 759          | 2490  | 3,18   | 49.1  | 811      | 2661  |
|        |       |        |       |        |               | N540 | 3,05   | 47.1  | 766          | 2513  | 3,25   | 50.1  | 842      | 2762  |
|        |       |        |       |        |               | N150 | 3,03   | 46.8  | 763          | 2503  | 3,22   | 49.7  | 815      | 2674  |
| 10,8   | 167   | Scenar | Lapua | 75,5   | 2.972         | N140 | 2,78   | 42.9  | 700          | 2297  | 2,96   | 45.7  | 760      | 2493  |
|        |       |        |       |        |               | N540 | 2,65   | 40.9  | 700          | 2297  | 3,07   | 47.4  | 771      | 2530  |
|        |       |        |       |        |               | N150 | 2,78   | 42.9  | 703          | 2306  | 3,08   | 47.5  | 761      | 2497  |
| 12,0   | 185   | Scenar | Lapua | 75,5   | 2.972         | N140 | 2,45   | 37.8  | 694          | 2277  | 2,71   | 41.8  | 710      | 2329  |
|        |       |        |       |        |               | N540 | 2,74   | 42.3  | 688          | 2257  | 2,87   | 44.3  | 722      | 2369  |
|        |       |        |       |        |               | N150 | 2,85   | 44.0  | 697          | 2287  | 2,93   | 45.2  | 723      | 2372  |

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



# .30-06 Springfield

Test barrel: 620 mm (24½"), 1 in 10" twist  
Primers: Large Rifle  
Cases: Lapua, trim-to length 63,10 mm (2.484")

| Bullet |       |                  |         | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|------------------|---------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type             | Mfg     | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |                  |         | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 3,7    | 57    | ALS <sup>1</sup> | Lapua   | 79,0   | 3.110         | N110 | 2,02   | 31.1  | 1075         | 3527  | 2,49   | 38.4  | 1217     | 3994  |
| 6,5    | 100   | HP               | Lapua   | 79,8   | 3.142         | N130 | 2,58   | 39.8  | 869          | 2851  | 3,15   | 48.6  | 998      | 3274  |
|        |       |                  |         |        |               | N133 | 3,07   | 47.4  | 911          | 2989  | 3,49   | 53.9  | 1016     | 3333  |
|        |       |                  |         |        |               | N135 | 3,25   | 50.1  | 927          | 3041  | 3,66   | 56.5  | 1033     | 3389  |
|        |       |                  |         |        |               | N140 | 3,50   | 54.0  | 926          | 3038  | 3,96   | 61.1  | 1044     | 3425  |
|        |       |                  |         |        |               | N540 | 3,59   | 55.4  | 939          | 3081  | 4,08   | 63.0  | 1058     | 3471  |
| 7,1    | 110   | RN               | Hornady | 74,0   | 2.913         | N133 | 3,15   | 48.6  | 873          | 2864  | 3,48   | 53.7  | 983      | 3225  |
|        |       |                  |         |        |               | N135 | 3,14   | 48.5  | 864          | 2835  | 3,47   | 53.5  | 964      | 3163  |
|        |       |                  |         |        |               | N140 | 3,38   | 52.2  | 881          | 2890  | 3,74   | 57.7  | 977      | 3205  |
|        |       |                  |         |        |               | N150 | 3,57   | 55.1  | 905          | 2969  | 3,94   | 60.8  | 1002     | 3287  |
| 8,0    | 123   | FMJ              | Lapua   | 79,8   | 3.142         | N130 | 2,61   | 40.3  | 838          | 2749  | 3,01   | 46.4  | 934      | 3064  |
|        |       |                  |         |        |               | N133 | 2,95   | 45.5  | 825          | 2707  | 3,31   | 51.1  | 922      | 3025  |
|        |       |                  |         |        |               | N135 | 3,19   | 49.2  | 852          | 2795  | 3,48   | 53.7  | 937      | 3074  |
|        |       |                  |         |        |               | N140 | 3,35   | 51.7  | 853          | 2799  | 3,73   | 57.6  | 952      | 3123  |
|        |       |                  |         |        |               | N540 | 3,49   | 53.9  | 863          | 2831  | 3,83   | 59.1  | 958      | 3143  |
|        |       |                  |         |        |               | N150 | 3,59   | 55.4  | 880          | 2887  | 3,91   | 60.3  | 976      | 3202  |
| 8,1    | 125   | Ballistic Tip    | Nosler  | 84,0   | 3.307         | N135 | 3,10   | 47.8  | 865          | 2838  | 3,40   | 52.5  | 935      | 3068  |
|        |       |                  |         |        |               | N140 | 3,31   | 51.1  | 878          | 2881  | 3,64   | 56.2  | 958      | 3143  |
|        |       |                  |         |        |               | N540 | 3,49   | 53.9  | 880          | 2887  | 3,91   | 60.3  | 994      | 3261  |
|        |       |                  |         |        |               | N150 | 3,34   | 51.5  | 882          | 2894  | 3,81   | 58.8  | 966      | 3169  |
|        |       |                  |         |        |               | N550 | 3,70   | 57.1  | 895          | 2936  | 3,91   | 60.3  | 950      | 3117  |
| 8,5    | 130   | HP               | Lapua   | 84,0   | 3.307         | N135 | 3,08   | 47.5  | 843          | 2766  | 3,50   | 54.0  | 952      | 3123  |
|        |       |                  |         |        |               | N140 | 3,29   | 50.8  | 862          | 2828  | 3,79   | 58.4  | 979      | 3213  |
|        |       |                  |         |        |               | N540 | 3,40   | 52.5  | 867          | 2844  | 3,87   | 59.7  | 994      | 3261  |
|        |       |                  |         |        |               | N150 | 3,50   | 54.0  | 871          | 2858  | 3,89   | 60.0  | 976      | 3202  |
| 9,7    | 150   | Lock Base        | Lapua   | 84,0   | 3.307         | N135 | 2,93   | 45.2  | 789          | 2589  | 3,23   | 49.8  | 851      | 2792  |
|        |       |                  |         |        |               | N140 | 3,13   | 48.3  | 802          | 2631  | 3,45   | 53.2  | 872      | 2861  |
|        |       |                  |         |        |               | N540 | 3,16   | 48.8  | 792          | 2598  | 3,54   | 54.6  | 882      | 2894  |
|        |       |                  |         |        |               | N150 | 3,25   | 50.1  | 803          | 2635  | 3,58   | 55.2  | 877      | 2877  |
|        |       |                  |         |        |               | N550 | 3,51   | 54.2  | 819          | 2687  | 3,87   | 59.7  | 917      | 3009  |
| 9,7    | 150   | Mega             | Lapua   | 82,0   | 3.228         | N135 | 2,60   | 40.1  | 711          | 2333  | 3,09   | 47.7  | 835      | 2740  |
|        |       |                  |         |        |               | N140 | 2,83   | 43.7  | 732          | 2402  | 3,32   | 51.2  | 857      | 2812  |
|        |       |                  |         |        |               | N540 | 2,94   | 45.4  | 742          | 2434  | 3,47   | 53.5  | 893      | 2930  |
| 9,7    | 150   | HPBT             | Sierra  | 84,0   | 3.307         | N140 | 3,08   | 47.5  | 798          | 2618  | 3,42   | 52.8  | 871      | 2858  |
|        |       |                  |         |        |               | N540 | 3,27   | 50.5  | 809          | 2654  | 3,64   | 56.2  | 906      | 2972  |
|        |       |                  |         |        |               | N150 | 3,29   | 50.8  | 807          | 2648  | 3,65   | 56.3  | 895      | 2936  |
|        |       |                  |         |        |               | N550 | 3,54   | 54.6  | 833          | 2733  | 3,87   | 59.7  | 916      | 3005  |
| 10,0   | 155   | Scenar           | Lapua   | 84,0   | 3.307         | N140 | 2,78   | 42.9  | 755          | 2477  | 3,23   | 49.8  | 850      | 2789  |
|        |       |                  |         |        |               | N150 | 2,79   | 43.0  | 767          | 2516  | 3,30   | 50.9  | 863      | 2831  |
|        |       |                  |         |        |               | N540 | 3,05   | 47.1  | 774          | 2539  | 3,45   | 53.3  | 886      | 2907  |
| 10,1   | 156   | SPBT             | Sako    | 80,5   | 3.169         | N135 | 2,97   | 45.8  | 776          | 2546  | 3,29   | 50.8  | 851      | 2792  |
|        |       |                  |         |        |               | N140 | 3,10   | 47.8  | 775          | 2543  | 3,42   | 52.8  | 859      | 2818  |
|        |       |                  |         |        |               | N150 | 3,18   | 49.1  | 781          | 2562  | 3,53   | 54.5  | 863      | 2831  |
| 10,9   | 167   | Scenar           | Lapua   | 84,0   | 3.307         | N135 | 2,75   | 42.4  | 746          | 2449  | 3,02   | 46.6  | 808      | 2651  |
|        |       |                  |         |        |               | N140 | 2,95   | 45.5  | 737          | 2418  | 3,25   | 50.1  | 812      | 2664  |
|        |       |                  |         |        |               | N540 | 2,94   | 45.4  | 737          | 2418  | 3,37   | 52.0  | 836      | 2743  |
|        |       |                  |         |        |               | N150 | 3,06   | 47.2  | 748          | 2454  | 3,38   | 52.2  | 821      | 2694  |
|        |       |                  |         |        |               | N550 | 3,22   | 49.7  | 779          | 2556  | 3,57   | 55.1  | 855      | 2805  |
|        |       |                  |         |        |               | N160 | 3,60   | 55.5  | 749          | 2457  | 4,00   | 61.7  | 842      | 2762  |

<sup>1)</sup> A muzzle velocity exceeding 1000 m/s ( 3300 fps) may lead to severe barrel fouling!  
= Accuracy load

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

# .30-06 Springfield

Test barrel: 620 mm (24½"), 1 in 10" twist  
Primers: Large Rifle  
Cases: Lapua, trim-to length 63,10 mm (2.484")

| Bullet |       |              |         | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|--------------|---------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type         | Mfg     | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |              |         | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 11,0   | 170   | LockBase     | Lapua   | 84,0   | 3.307         | N140 | 2,91   | 44.9  | 717          | 2352  | 3,24   | 50.0  | 799      | 2621  |
|        |       |              |         |        |               | N540 | 2,96   | 45.7  | 729          | 2392  | 3,34   | 51.5  | 821      | 2694  |
|        |       |              |         |        |               | N150 | 3,06   | 47.2  | 735          | 2411  | 3,41   | 52.6  | 815      | 2674  |
|        |       |              |         |        |               | N550 | 3,17   | 48.9  | 746          | 2448  | 3,61   | 55.7  | 842      | 2762  |
|        |       |              |         |        |               | N160 | 3,65   | 56.3  | 765          | 2510  | 4,05   | 62.5  | 853      | 2799  |
| 11,0   | 170   | Naturalis LR | Lapua   | 82,0   | 3.228         | N140 | 2,77   | 42.7  | 693          | 2274  | 3,13   | 48.3  | 784      | 2572  |
|        |       |              |         |        |               | N150 | 2,54   | 39.2  | 753          | 2470  | 3,12   | 48.1  | 822      | 2697  |
|        |       |              |         |        |               | N550 | 3,16   | 48.8  | 761          | 2497  | 3,42   | 52.8  | 845      | 2772  |
|        |       |              |         |        |               | N160 | 3,39   | 52.3  | 756          | 2480  | 3,74   | 57.7  | 846      | 2776  |
| 11,7   | 180   | XFB          | Barnes  | 84,0   | 3.307         | N550 | 3,15   | 48.6  | 704          | 2310  | 3,53   | 54.5  | 791      | 2595  |
| 11,7   | 180   | Naturalis    | Lapua   | 80,4   | 3.165         | N150 | 2,75   | 42.4  | 717          | 2352  | 3,13   | 48.3  | 789      | 2589  |
|        |       |              |         |        |               | N550 | 3,20   | 49.4  | 753          | 2470  | 3,50   | 54.0  | 830      | 2723  |
|        |       |              |         |        |               | N160 | 3,40   | 52.5  | 765          | 2510  | 3,62   | 55.9  | 819      | 2687  |
|        |       |              |         |        |               | N560 | 3,45   | 53.2  | 733          | 2405  | 3,87   | 59.7  | 829      | 2720  |
| 12,0   | 185   | Mega         | Lapua   | 79,5   | 3.130         | N150 | 2,75   | 42.4  | 692          | 2270  | 3,28   | 50.6  | 791      | 2595  |
|        |       |              |         |        |               | N550 | 3,12   | 48.1  | 728          | 2388  | 3,46   | 53.4  | 812      | 2664  |
|        |       |              |         |        |               | N160 | 3,38   | 52.2  | 739          | 2425  | 3,71   | 57.2  | 815      | 2674  |
| 12,0   | 185   | Scenar       | Lapua   | 84,0   | 3.307         | N540 | 2,86   | 44.1  | 688          | 2257  | 3,16   | 48.8  | 771      | 2530  |
|        |       |              |         |        |               | N150 | 2,88   | 44.4  | 696          | 2283  | 3,26   | 50.3  | 778      | 2552  |
|        |       |              |         |        |               | N550 | 3,02   | 46.6  | 701          | 2300  | 3,36   | 51.8  | 792      | 2598  |
|        |       |              |         |        |               | N160 | 3,48   | 53.7  | 724          | 2375  | 3,85   | 59.4  | 809      | 2654  |
|        |       |              |         |        |               | N560 | 3,52   | 54.3  | 724          | 2375  | 4,01   | 61.9  | 816      | 2677  |
| 12,3   | 190   | HPBT         | Sierra  | 84,0   | 3.307         | N150 | 2,90   | 44.7  | 695          | 2280  | 3,20   | 49.4  | 767      | 2516  |
|        |       |              |         |        |               | N550 | 3,07   | 47.4  | 708          | 2323  | 3,49   | 53.9  | 812      | 2664  |
|        |       |              |         |        |               | N160 | 3,42   | 52.8  | 724          | 2375  | 3,81   | 58.8  | 795      | 2608  |
|        |       |              |         |        |               | N560 | 3,57   | 55.1  | 721          | 2365  | 4,04   | 62.3  | 825      | 2707  |
| 13,0   | 200   | Mega         | Lapua   | 79,5   | 3.130         | N150 | 2,75   | 42.4  | 692          | 2270  | 3,10   | 47.8  | 747      | 2451  |
|        |       |              |         |        |               | N550 | 3,12   | 48.1  | 730          | 2395  | 3,28   | 50.6  | 767      | 2516  |
|        |       |              |         |        |               | N160 | 3,38   | 52.2  | 739          | 2425  | 3,48   | 53.7  | 763      | 2503  |
| 13,0   | 200   | Partition    | Nosler  | 84,0   | 3.307         | N150 | 2,79   | 43.0  | 669          | 2195  | 3,08   | 47.5  | 724      | 2375  |
|        |       |              |         |        |               | N160 | 3,38   | 52.2  | 704          | 2310  | 3,73   | 57.6  | 765      | 2510  |
| 14,3   | 220   | RN           | Hornady | 84,0   | 3.307         | N160 | 3,29   | 50.8  | 654          | 2146  | 3,63   | 56.0  | 722      | 2369  |
|        |       |              |         |        |               | N560 | 3,47   | 53.5  | 672          | 2205  | 3,97   | 61.3  | 767      | 2516  |

= Accuracy load

# .300 H&H Magnum

Test barrel: 610 mm (24"), 1 in 10" twist  
Primers: Large Rifle Magnum  
Cases: Winchester, trim-to length 72,20 mm (2.842")

| Bullet |       |        |        | Powder | Starting load |      |        |       | Maximum load |       |        |       |          |       |
|--------|-------|--------|--------|--------|---------------|------|--------|-------|--------------|-------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg    | C.O.L. |               | Type | Weight |       | Velocity     |       | Weight |       | Velocity |       |
| [g]    | [grs] |        |        | [mm]   | [in.]         |      | [g]    | [grs] | [m/s]        | [fps] | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | Scenar | Lapua  | 91,4   | 3.598         | N150 | 3,76   | 58.0  | 888          | 2913  | 3,97   | 61.3  | 935      | 3068  |
|        |       |        |        |        |               | N550 | 3,98   | 61.4  | 914          | 2999  | 4,26   | 65.8  | 971      | 3187  |
|        |       |        |        |        |               | N160 | 4,28   | 66.0  | 909          | 2982  | 4,57   | 70.5  | 967      | 3174  |
| 12,0   | 185   | Scenar | Lapua  | 91,4   | 3.598         | N160 | 3,95   | 60.9  | 820          | 2690  | 4,21   | 64.9  | 872      | 2862  |
|        |       |        |        |        |               | N560 | 4,31   | 66.5  | 851          | 2792  | 4,59   | 70.9  | 908      | 2978  |
|        |       |        |        |        |               | N165 | 4,35   | 67.1  | 843          | 2766  | 4,62   | 71.4  | 895      | 2937  |
| 13,0   | 200   | HPBT   | Sierra | 91,4   | 3.598         | N160 | 3,87   | 59.7  | 792          | 2598  | 4,04   | 62.4  | 829      | 2719  |
|        |       |        |        |        |               | N560 | 4,21   | 65.0  | 821          | 2694  | 4,42   | 68.1  | 864      | 2834  |
|        |       |        |        |        |               | N165 | 4,24   | 65.4  | 813          | 2667  | 4,45   | 68.6  | 853      | 2799  |

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

## .300 WSM

Test barrel: 620 mm (24½"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Winchester, max. length 51,34 mm (2,021")

| Bullet |       |           |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,7   | 165   | Scirocco  | Swift | 73,5   | 2.894  | N550          | 3,77   | 58.2  | 862      | 2828         | 4,16   | 64.2  | 957      | 3140  |
|        |       |           |       |        |        | N160          | 3,87   | 59.7  | 842      | 2762         | 4,33   | 66.8  | 937      | 3074  |
|        |       |           |       |        |        | N560          | 4,23   | 65.3  | 858      | 2815         | 4,63   | 71.5  | 959      | 3146  |
| 12,0   | 185   | Scenar    | Lapua | 77,0   | 3.031  | N160          | 3,83   | 59.1  | 799      | 2621         | 4,22   | 65.1  | 882      | 2894  |
|        |       |           |       |        |        | N560          | 4,11   | 63.4  | 814      | 2671         | 4,50   | 69.4  | 906      | 2972  |
|        |       |           |       |        |        | N165          | 4,18   | 64.5  | 823      | 2700         | 4,62   | 71.3  | 911      | 2989  |
| 13,0   | 200   | Naturalis | Lapua | 68,0   | 2.677  | N160          | 3,56   | 54.9  | 733      | 2405         | 4,00   | 61.7  | 815      | 2674  |
|        |       |           |       |        |        | N560          | 3,80   | 58.6  | 743      | 2438         | 4,30   | 66.4  | 838      | 2749  |
|        |       |           |       |        |        | N165          | 3,90   | 60.2  | 758      | 2487         | 4,45   | 68.7  | 834      | 2736  |
| 13,0   | 200   | Mega      | Lapua | 70,0   | 2.756  | N160          | 3,67   | 56.6  | 749      | 2457         | 4,15   | 64.0  | 837      | 2746  |
|        |       |           |       |        |        | N560          | 3,98   | 61.4  | 772      | 2533         | 4,44   | 68.5  | 864      | 2835  |
|        |       |           |       |        |        | N165          | 4,10   | 63.3  | 777      | 2549         | 4,56   | 70.4  | 866      | 2841  |

## .300 Winchester Magnum

Test barrel: 620 mm (24½"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: LAPUA, trim-to length 66,30 mm (2.610")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |                      |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|----------------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type                 | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                      |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,1    | 110   | SP                   | Hornady | 83,0   | 3.268  | N160          | 5,40   | 83.3  | 1063     | 3488         | 5,65   | 87.1  | 1122     | 3679  |
| 8,5    | 130   | HP                   | Lapua   | 84,2   | 3.315  | N160          | 4,99   | 77.0  | 964      | 3162         | 5,34   | 82.4  | 1041     | 3416  |
| 9,7    | 150   | Ballistic Tip        | Nosler  | 84,8   | 3.339  | N160          | 4,79   | 73.9  | 913      | 2994         | 5,01   | 77.3  | 986      | 3234  |
|        |       |                      |         |        |        | N165          | 5,20   | 80.2  | 940      | 3084         | 5,35C  | 82.6C | 997      | 3271  |
| 10,85  | 167   | Scenar               | Lapua   | 84,8   | 3.339  | N560          | 4,70   | 72.5  | 846      | 2776         | 5,06   | 78.1  | 939      | 3081  |
| 10,85  | 167   | Silver Jacket Scenar | Lapua   | 84,8   | 3.339  | N160          | 4,39   | 67.7  | 830      | 2723         | 4,83   | 74.5  | 919      | 3015  |
|        |       |                      |         |        |        | N560          | 4,77   | 73.6  | 844      | 2769         | 5,15   | 79.5  | 943      | 3094  |
|        |       |                      |         |        |        | N165          | 4,73   | 73.0  | 846      | 2776         | 5,23   | 80.7  | 936      | 3071  |
| 10,9   | 167   | Scenar               | Lapua   | 84,8   | 3.339  | N160          | 4,70   | 72.4  | 880      | 2887         | 5,01   | 77.3  | 950      | 3117  |
|        |       |                      |         |        |        | N165          | 5,02   | 77.5  | 892      | 2927         | 5,39C  | 83.2  | 967      | 3171  |
|        |       |                      |         |        |        | N160          | 4,43   | 68.4  | 849      | 2785         | 4,82   | 74.4  | 936      | 3071  |
| 11,0   | 170   | Lock Base            | Lapua   | 84,8   | 3.339  | N560          | 4,80   | 74.1  | 851      | 2792         | 5,09   | 78.5  | 952      | 3123  |
|        |       |                      |         |        |        | N165          | 4,82   | 74.4  | 866      | 2841         | 5,15   | 79.5  | 951      | 3120  |
|        |       |                      |         |        |        | N160          | 3,65   | 56.3  | 773      | 2536         | 3,78   | 58.3  | 840      | 2756  |
| 11,0   | 170   | Naturalis LR         | Lapua   | 84,8   | 3.339  | N560          | 4,26   | 65.7  | 818      | 2684         | 4,78   | 73.8  | 923      | 3028  |
|        |       |                      |         |        |        | N165          | 4,00   | 61.7  | 789      | 2589         | 4,80   | 74.1  | 899      | 2949  |
|        |       |                      |         |        |        | N160          | 4,52   | 69.8  | 843      | 2765         | 4,94   | 76.1  | 916      | 3004  |
| 11,7   | 180   | Partition            | Nosler  | 84,8   | 3.339  | N165          | 4,86   | 75.0  | 852      | 2795         | 5,26   | 81.1  | 925      | 3033  |
|        |       |                      |         |        |        | N160          | 4,05   | 62.5  | 836      | 2743         | 4,53   | 69.9  | 878      | 2881  |
|        |       |                      |         |        |        | N560          | 4,80   | 74.1  | 873      | 2864         | 5,01   | 77.3  | 913      | 2995  |
| 12,0   | 185   | Scenar               | Lapua   | 84,8   | 3.339  | N165          | 4,45   | 68.7  | 839      | 2753         | 4,93   | 76.1  | 887      | 2910  |
|        |       |                      |         |        |        | N160          | 4,26   | 65.7  | 805      | 2641         | 4,70   | 72.5  | 894      | 2933  |
|        |       |                      |         |        |        | N560          | 4,60   | 71.0  | 816      | 2677         | 5,01   | 77.3  | 917      | 3009  |
| 12,0   | 185   | Silver Jacket Scenar | Lapua   | 84,8   | 3.339  | N165          | 4,72   | 72.8  | 825      | 2707         | 5,10   | 78.7  | 915      | 3002  |
|        |       |                      |         |        |        | N160          | 4,22   | 65.1  | 795      | 2608         | 4,74   | 73.1  | 880      | 2887  |
|        |       |                      |         |        |        | N560          | 4,62   | 71.3  | 814      | 2671         | 5,00   | 77.2  | 905      | 2969  |
|        |       |                      |         |        |        | N165          | 4,64   | 71.6  | 819      | 2687         | 5,01   | 77.3  | 895      | 2936  |

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.

C = Compressed load

Light grey text box = Accuracy load

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

## .300 Winchester Magnum

Test barrel: 620 mm (24½"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: LAPUA, trim-to length 66,30 mm (2.610")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |           |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 12,3   | 190   | HPBT      | Sierra | 84,8   | 3.339  | N560          | 4,34   | 66.9  | 823      | 2701         | 4,88   | 75.3  | 898      | 2947  |
|        |       |           |        |        |        | N165          | 4,49   | 69.2  | 816      | 2676         | 5,01   | 77.3  | 882      | 2893  |
|        |       |           |        |        |        | N170          | 4,40   | 67.8  | 788      | 2586         | 5,06   | 78.0  | 861      | 2826  |
| 13,0   | 200   | Mega      | Lapua  | 84,5   | 3.327  | N560          | 4,00   | 61.7  | 753      | 2470         | 4,55   | 70.2  | 834      | 2736  |
|        |       |           |        |        |        | N165          | 4,10   | 63.3  | 748      | 2454         | 4,65   | 71.7  | 823      | 2700  |
|        |       |           |        |        |        | N170          | 4,31   | 66.5  | 740      | 2428         | 4,95   | 76.4  | 824      | 2703  |
| 13,0   | 200   | Naturalis | Lapua  | 84,0   | 3.307  | N560          | 3,98   | 61.4  | 745      | 2444         | 4,40   | 67.9  | 819      | 2687  |
|        |       |           |        |        |        | N165          | 3,65   | 56.3  | 703      | 2306         | 4,29   | 66.2  | 800      | 2625  |
|        |       |           |        |        |        | N170          | 4,23   | 65.3  | 728      | 2388         | 4,70   | 72.5  | 810      | 2657  |
| 13,0   | 200   | HPBT      | Sierra | 84,8   | 3.339  | N170          | 4,05   | 62.4  | 743      | 2438         | 4,85   | 74.8  | 828      | 2717  |
|        |       |           |        |        |        | N560          | 3,95   | 60.9  | 770      | 2526         | 4,60   | 70.9  | 852      | 2795  |
|        |       |           |        |        |        | N160          | 4,02   | 62.0  | 760      | 2495         | 4,56   | 70.3  | 835      | 2741  |
| 14,3   | 220   | HPBT      | Sierra | 84,8   | 3.339  | N165          | 4,15   | 64.0  | 768      | 2518         | 4,79   | 73.8  | 846      | 2774  |
|        |       |           |        |        |        | N570          | 4,84   | 74.7  | 797      | 2615         | 5,31   | 81.9  | 891      | 2923  |
|        |       |           |        |        |        | N560          | 3,40   | 52.5  | 694      | 2278         | 4,12   | 63.6  | 782      | 2567  |
|        |       |           |        |        |        | N165          | 3,27   | 50.4  | 667      | 2187         | 4,24   | 65.4  | 772      | 2531  |
|        |       |           |        |        |        | N170          | 3,65   | 56.3  | 688      | 2256         | 4,31   | 66.5  | 767      | 2515  |
|        |       |           |        |        |        | N570          | 4,23   | 65.3  | 744      | 2441         | 4,88   | 75.3  | 833      | 2733  |

## .300 Weatherby Magnum

Test barrel: 660 mm (26"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Weatherby, trim-to length 71,50 mm (2.815")

**CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!**

| Bullet |       |               |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 8,1    | 125   | Ballistic Tip | Nosler  | 90,0   | 3.543  | N160          | 5,19   | 80.2  | 1046     | 3430         | 5,52   | 85.2  | 1104     | 3623  |
| 9,7    | 150   | Ballistic Tip | Nosler  | 90,1   | 3.547  | N160          | 4,88   | 75.2  | 945      | 3102         | 5,22   | 80.6  | 1003     | 3291  |
|        |       |               |         |        |        | N165          | 5,27   | 81.3  | 949      | 3113         | 5,59   | 86.3  | 1019     | 3343  |
| 10,7   | 165   | SPBT          | Speer   | 90,3   | 3.555  | N160          | 4,85   | 74.8  | 923      | 3028         | 5,16   | 79.6  | 975      | 3200  |
|        |       |               |         |        |        | N165          | 5,24   | 80.9  | 932      | 3057         | 5,57   | 85.9  | 984      | 3228  |
| 11,7   | 180   | SP            | Hornady | 90,3   | 3.555  | N160          | 4,66   | 71.9  | 875      | 2872         | 5,01   | 77.3  | 930      | 3050  |
|        |       |               |         |        |        | N165          | 5,04   | 77.7  | 888      | 2912         | 5,43   | 83.8  | 944      | 3098  |
| 13,0   | 200   | Naturalis     | Lapua   | 88,5   | 3.484  | N560          | 4,16   | 64.2  | 816      | 2677         | 4,44   | 68.5  | 842      | 2762  |
|        |       |               |         |        |        | N165          | 4,16   | 64.2  | 817      | 2680         | 4,29   | 66.2  | 800      | 2625  |
|        |       |               |         |        |        | N170          | 4,50   | 69.4  | 800      | 2625         | 4,82   | 74.4  | 840      | 2756  |
| 13,0   | 200   | HPBT          | Sierra  | 90,3   | 3.555  | N560          | 4,47   | 69.0  | 821      | 2694         | 4,81   | 74.2  | 872      | 2862  |
|        |       |               |         |        |        | N165          | 4,39   | 67.7  | 795      | 2609         | 4,87   | 75.1  | 858      | 2814  |
|        |       |               |         |        |        | N170          | 4,44   | 68.5  | 781      | 2562         | 5,11   | 78.9  | 859      | 2817  |

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

## .300 Lapua Magnum

Test barrel: 690 mm (27"), 1 in 9½ twist  
 Primers: Large Rifle Magnum  
 Cases: LAPUA, trim to-length 68,90 mm (2.713")

| Bullet |       |           |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | Scenar    | Lapua  | 93,0   | 3.661  | N160          | 4,89   | 75.5  | 973      | 3192         | 5,23   | 80.7  | 1023     | 3355  |
|        |       |           |        |        |        | N560          | 5,24   | 80.9  | 973      | 3192         | 5,73   | 88.4  | 1057     | 3468  |
|        |       |           |        |        |        | N170          | 6,01   | 92.7  | 993      | 3258         | 6,41   | 99.0  | 1064     | 3491  |
| 11,0   | 170   | Lock Base | Lapua  | 93,0   | 3.661  | N560          | 5,12   | 79.0  | 942      | 3091         | 5,49   | 84.7  | 1004     | 3293  |
|        |       |           |        |        |        | N170          | 5,66   | 87.3  | 939      | 3081         | 6,10   | 94.1  | 1003     | 3292  |
|        |       |           |        |        |        | 24N41         | 6,15   | 94.9  | 945      | 3100         | 6,56   | 101.2 | 1015     | 3331  |
| 12,0   | 185   | Scenar    | Lapua  | 93,0   | 3.661  | N560          | 4,82   | 74.4  | 879      | 2884         | 5,31   | 81.9  | 954      | 3131  |
|        |       |           |        |        |        | N170          | 5,40   | 83.3  | 893      | 2930         | 5,89   | 90.9  | 962      | 3158  |
|        |       |           |        |        |        | 24N41         | 5,93   | 91.5  | 916      | 3005         | 6,30   | 97.2  | 965      | 3166  |
| 13,0   | 200   | HPBT      | Sierra | 93,0   | 3.661  | N170          | 5,09   | 78.5  | 851      | 2792         | 5,56   | 85.8  | 915      | 3003  |
|        |       |           |        |        |        | 24N41         | 5,56   | 85.8  | 866      | 2841         | 6,01   | 92.8  | 928      | 3044  |
| 14,3   | 220   | HPBT      | Sierra | 93,0   | 3.661  | 24N41         | 5,10   | 78.7  | 804      | 2638         | 5,67   | 87.4  | 875      | 2871  |
|        |       |           |        |        |        | 20N29         | 6,06   | 93.5  | 856      | 2808         | 6,45   | 99.6  | 908      | 2980  |

## .300 Remington Ultra Magnum

Test barrel: 660 mm (26"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Remington, trim-to length 72,10 mm (2.839")

| Bullet |       |           |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | Scenar    | Lapua  | 89,5   | 3.524  | N160          | 5,29   | 81.6  | 957      | 3140         | 5,80   | 89.5  | 1044     | 3425  |
|        |       |           |        |        |        | N560          | 5,60   | 86.4  | 865      | 2838         | 6,09   | 94.0  | 1067     | 3501  |
|        |       |           |        |        |        | N165          | 5,60   | 86.4  | 952      | 3123         | 6,19   | 95.5  | 1052     | 3451  |
| 10,7   | 165   | Partition | Nosler | 89,5   | 3.524  | N160          | 4,97   | 76.7  | 896      | 2940         | 5,64   | 87.0  | 980      | 3214  |
|        |       |           |        |        |        | N560          | 5,39   | 83.2  | 902      | 2959         | 6,13   | 94.5  | 1027     | 3371  |
|        |       |           |        |        |        | N165          | 5,57   | 85.9  | 919      | 3015         | 6,12   | 94.4  | 1009     | 3311  |
| 11,7   | 180   | XFB       | Barnes | 89,5   | 3.524  | N165          | 4,52   | 69.7  | 833      | 2733         | 5,40   | 83.3  | 939      | 3079  |
|        |       |           |        |        |        | N560          | 4,65   | 71.7  | 854      | 2802         | 5,60   | 86.3  | 956      | 3137  |
|        |       |           |        |        |        | N170          | 4,90   | 75.6  | 840      | 2756         | 6,12   | 94.4  | 952      | 3124  |
| 12,0   | 185   | Scenar    | Lapua  | 91,4   | 3.598  | N560          | 5,46   | 84.2  | 888      | 2913         | 5,93   | 91.5  | 979      | 3213  |
|        |       |           |        |        |        | N165          | 5,18   | 79.9  | 865      | 2838         | 6,09   | 94.0  | 960      | 3148  |
|        |       |           |        |        |        | N170          | 5,98   | 92.3  | 875      | 2871         | 6,40   | 98.7  | 966      | 3170  |
|        |       |           |        |        |        | N570          | 5,90   | 91.0  | 908      | 2979         | 6,54   | 100.9 | 1023     | 3356  |
| 13,0   | 200   | Mega      | Lapua  | 89,3   | 3.516  | N560          | 5,24   | 80.9  | 892      | 2927         | 5,85   | 90.3  | 959      | 3146  |
|        |       |           |        |        |        | N165          | 4,95   | 76.4  | 831      | 2726         | 5,70   | 88.0  | 922      | 3025  |
|        |       |           |        |        |        | N570          | 5,70   | 88.0  | 877      | 2877         | 6,37   | 98.3  | 958      | 3143  |
| 13,0   | 200   | Naturalis | Lapua  | 89,2   | 3.512  | N560          | 4,87   | 75.1  | 842      | 2762         | 5,57   | 85.9  | 933      | 3061  |
|        |       |           |        |        |        | N165          | 4,75   | 73.3  | 826      | 2710         | 5,62   | 86.7  | 923      | 3028  |
|        |       |           |        |        |        | N170          | 5,16   | 79.6  | 833      | 2733         | 5,82   | 89.8  | 912      | 2992  |
|        |       |           |        |        |        | N570          | 5,44   | 83.9  | 860      | 2822         | 6,01   | 92.7  | 961      | 3153  |
|        |       |           |        |        |        | 24N41         | 5,60   | 86.4  | 829      | 2720         | 6,11   | 94.3  | 914      | 2999  |

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

## .30-.378 Weatherby Magnum

Test barrel: 670 mm (26½"), twist 10"  
 Primers: Large Rifle Magnum  
 Cases: Weatherby, trim to-length 73,70 mm (2.902")

CAUTION: Loads less than the listed starting loads may due to excessive chamber pressure and must not be used!

| Bullet |       |           |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | Scenar    | Lapua  | 93,0   | 3.661  | N160          | 6,10   | 94.1  | 1004     | 3294         | 6,41   | 98.9  | 1062     | 3484  |
|        |       |           |        |        |        | N165          | 6,68   | 103.1 | 1017     | 3337         | 6,94   | 107.1 | 1075     | 3527  |
|        |       |           |        |        |        | N170          | 7,23   | 111.6 | 1008     | 3307         | 7,54   | 116.3 | 1069     | 3507  |
| 11,0   | 170   | Lock Base | Lapua  | 93,0   | 3.661  | N160          | 5,63   | 86.9  | 933      | 3061         | 5,91   | 91.2  | 973      | 3192  |
|        |       |           |        |        |        | N165          | 6,33   | 97.7  | 957      | 3140         | 6,67   | 102.9 | 1002     | 3287  |
|        |       |           |        |        |        | N170          | 6,94   | 107.1 | 957      | 3140         | 7,20   | 111.1 | 1008     | 3307  |
|        |       |           |        |        |        | 24N41         | 7,31   | 112.8 | 980      | 3215         | 7,83   | 120.8 | 1060     | 3478  |
| 12,0   | 185   | Scenar    | Lapua  | 93,0   | 3.661  | N160          | 5,61   | 86.6  | 913      | 2995         | 5,95   | 91.8  | 963      | 3159  |
|        |       |           |        |        |        | N560          | 5,96   | 92.0  | 922      | 3025         | 6,26   | 96.6  | 981      | 3219  |
|        |       |           |        |        |        | N170          | 6,69   | 103.2 | 946      | 3104         | 7,12   | 109.9 | 1009     | 3310  |
|        |       |           |        |        |        | 24N41         | 7,16   | 110.5 | 959      | 3146         | 7,58   | 117.0 | 1023     | 3356  |
|        |       |           |        |        |        | 20N29         | 7,94   | 122.5 | 971      | 3186         | 8,18   | 126.2 | 1003     | 3291  |
| 13,0   | 200   | HPBT      | Sierra | 93,0   | 3.661  | 24N41         | 4,80   | 74.1  | 691      | 2267         | 6,96   | 107.4 | 949      | 3114  |
|        |       |           |        |        |        | 20N29         | 7,52   | 116.0 | 918      | 3012         | 7,88   | 121.6 | 980      | 3215  |
|        |       |           |        |        |        | 20N29         | 7,14   | 110.2 | 874      | 2868         | 7,64   | 117.9 | 938      | 3077  |

## 7,62 x 39

Test barrel: 415 mm (16"), 1 in 9½ twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 38,50 mm (1.516")

| Bullet |       |      |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 3,7    | 57    | ALS  | Lapua | 55,7   | 2.193  | N110          | 1,56   | 24.1  | 925      | 3035         | 1,78   | 27.5  | 997      | 3233  |
|        |       |      |       |        |        | N110          | 1,22   | 18.8  | 685      | 2247         | 1,41   | 21.8  | 772      | 2503  |
| 6,5    | 100   | HP   | Lapua | 55,4   | 2.181  | N120          | 1,65   | 25.5  | 688      | 2257         | 1,80   | 27.8  | 769      | 2494  |
|        |       |      |       |        |        | N120          | 1,60   | 24.7  | 663      | 2175         | 1,77   | 27.3  | 728      | 2361  |
|        |       |      |       |        |        | N120          | 1,55   | 23.9  | 658      | 2157         | 1,68   | 26.0  | 712      | 2309  |
| 8,1    | 125   | Mega | Lapua | 52,4   | 2.063  | N130          | 1,68   | 25.8  | 677      | 2219         | 1,79   | 27.6  | 728      | 2359  |

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

## .303 British

Test barrel: 600 mm (23½"), 1 in 10" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 56,20 mm (2.213")

| Bullet |       |                   |        | Powder | Starting load |      |      |        | Maximum load |          |      |        |       |          |
|--------|-------|-------------------|--------|--------|---------------|------|------|--------|--------------|----------|------|--------|-------|----------|
| Weight |       | Type              | Mfg    |        | C.O.L.        |      | Type | Weight |              | Velocity |      | Weight |       | Velocity |
| [g]    | [grs] |                   |        | [mm]   | [in.]         |      | [g]  | [grs]  | [m/s]        | [fps]    | [g]  | [grs]  | [m/s] | [fps]    |
| 3,7    | 57    | ALS <sup>1)</sup> | Lapua  | 73,3   | 2.886         | N110 | 1,68 | 25.9   | 981          | 3219     | 2,21 | 34.1   | 1178  | 3865     |
| 8,0    | 123   | FMJ               | Lapua  | 73,3   | 2.886         | N120 | 2,18 | 33.6   | 819          | 2687     | 2,37 | 36.6   | 873   | 2864     |
|        |       |                   |        |        |               | N130 | 2,39 | 36.9   | 840          | 2756     | 2,59 | 40.0   | 895   | 2936     |
|        |       |                   |        |        |               | N133 | 2,58 | 39.8   | 858          | 2815     | 2,76 | 42.6   | 914   | 2999     |
| 9,7    | 150   | Mega              | Lapua  | 70,5   | 2.776         | N130 | 2,38 | 36.7   | 831          | 2726     | 2,55 | 39.3   | 884   | 2900     |
|        |       |                   |        |        |               | N133 | 2,49 | 38.4   | 839          | 2753     | 2,70 | 41.7   | 899   | 2949     |
| 11,3   | 174   | HPBT              | Sierra | 78,0   | 3.071         | N135 | 2,29 | 35.3   | 711          | 2333     | 2,49 | 38.4   | 761   | 2497     |
|        |       |                   |        |        |               | N140 | 2,49 | 38.4   | 725          | 2379     | 2,70 | 41.7   | 782   | 2566     |
|        |       |                   |        |        |               | N540 | 2,57 | 39.7   | 728          | 2388     | 2,78 | 42.9   | 791   | 2595     |
| 11,7   | 180   | Spitzer           | Sierra | 78,0   | 3.071         | N135 | 2,15 | 33.2   | 664          | 2178     | 2,36 | 36.4   | 714   | 2343     |
|        |       |                   |        |        |               | N140 | 2,33 | 36.0   | 683          | 2241     | 2,57 | 39.7   | 739   | 2425     |
|        |       |                   |        |        |               | N540 | 2,48 | 38.3   | 697          | 2287     | 2,70 | 41.7   | 758   | 2487     |

<sup>1)</sup> A muzzle velocity exceeding 1000 m/s ( 3300 fps) may lead to severe barrel fouling!

## 8 x 57 IS (8 mm Mauser)

Test barrel: 620 mm (24½"), 1 in 9½" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 56,80 mm (2.236")

| Bullet |       |           |         | Powder | Starting load |      |      |        | Maximum load |          |       |        |       |          |
|--------|-------|-----------|---------|--------|---------------|------|------|--------|--------------|----------|-------|--------|-------|----------|
| Weight |       | Type      | Mfg     |        | C.O.L.        |      | Type | Weight |              | Velocity |       | Weight |       | Velocity |
| [g]    | [grs] |           |         | [mm]   | [in.]         |      | [g]  | [grs]  | [m/s]        | [fps]    | [g]   | [grs]  | [m/s] | [fps]    |
| 8,1    | 125   | SP        | Hornady | 74,0   | 2.913         | N130 | 2,80 | 43.2   | 874          | 2867     | 3,12  | 48.1   | 950   | 3117     |
|        |       |           |         |        |               | N133 | 3,14 | 48.5   | 883          | 2897     | 3,50  | 54.0   | 979   | 3212     |
|        |       |           |         |        |               | N135 | 3,22 | 49.7   | 882          | 2894     | 3,57  | 55.1   | 974   | 3196     |
| 9,7    | 150   | Spitzer   | Speer   | 76,0   | 2.992         | N135 | 2,97 | 45.8   | 801          | 2628     | 3,31  | 51.1   | 880   | 2887     |
|        |       |           |         |        |               | N140 | 3,13 | 48.3   | 799          | 2621     | 3,49  | 53.9   | 892   | 2927     |
| 11,0   | 170   | SP        | Speer   | 77,0   | 3.031         | N135 | 2,86 | 44.1   | 748          | 2454     | 3,18  | 49.1   | 829   | 2720     |
|        |       |           |         |        |               | N140 | 2,99 | 46.1   | 747          | 2451     | 3,33  | 51.4   | 838   | 2749     |
|        |       |           |         |        |               | N150 | 3,13 | 48.3   | 761          | 2497     | 3,48  | 53.7   | 853   | 2799     |
| 11,7   | 180   | Naturalis | Lapua   | 80,5   | 3.189         | N135 | 2,56 | 39.5   | 717          | 2352     | 2,88  | 44.4   | 776   | 2546     |
|        |       |           |         |        |               | N140 | 2,93 | 45.2   | 733          | 2405     | 3,21  | 49.5   | 780   | 2559     |
|        |       |           |         |        |               | N540 | 2,98 | 46.0   | 716          | 2349     | 3,17  | 48.9   | 816   | 2677     |
|        |       |           |         |        |               | N150 | 2,93 | 45.2   | 731          | 2398     | 3,22F | 49.7F  | 802   | 2631     |
| 13,0   | 200   | Spitzer   | Speer   | 79,5   | 3.130         | N140 | 2,77 | 42.7   | 661          | 2169     | 3,08  | 47.5   | 759   | 2490     |
|        |       |           |         |        |               | N150 | 2,86 | 44.1   | 680          | 2231     | 3,19  | 49.2   | 763   | 2503     |
| 13,0   | 200   | Partition | Nosler  | 81,0   | 3.189         | N160 | 3,27 | 50.5   | 681          | 2234     | 3,64  | 56.2   | 785   | 2575     |

F = Case full

## 8 x 57 IRS

Test barrel: 620 mm (24½"), 1 in 9½" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 56,80 mm (2.236")

| Bullet |       |           |       | Powder | Starting load |      |      |        | Maximum load |          |      |        |       |          |
|--------|-------|-----------|-------|--------|---------------|------|------|--------|--------------|----------|------|--------|-------|----------|
| Weight |       | Type      | Mfg   |        | C.O.L.        |      | Type | Weight |              | Velocity |      | Weight |       | Velocity |
| [g]    | [grs] |           |       | [mm]   | [in.]         |      | [g]  | [grs]  | [m/s]        | [fps]    | [g]  | [grs]  | [m/s] | [fps]    |
| 9,7    | 150   | Spitzer   | Speer | 75,0   | 2.953         | N140 | 3,14 | 48.5   | 797          | 2615     | 3,35 | 51.7   | 858   | 2815     |
|        |       |           |       |        |               | N540 | 3,12 | 48.1   | 793          | 2602     | 3,52 | 54.3   | 890   | 2920     |
|        |       |           |       |        |               | N150 | 2,83 | 43.7   | 712          | 2336     | 3,08 | 47.5   | 890   | 2920     |
| 11,7   | 180   | Naturalis | Lapua | 81,0   | 3.189         | N135 | 2,56 | 39.5   | 740          | 2428     | 2,73 | 42.1   | 740   | 2428     |
|        |       |           |       |        |               | N140 | 2,71 | 41.8   | 698          | 2290     | 2,94 | 45.4   | 756   | 2480     |
|        |       |           |       |        |               | N540 | 2,86 | 44.1   | 710          | 2329     | 3,02 | 46.6   | 763   | 2503     |
|        |       |           |       |        |               | N150 | 2,83 | 43.7   | 712          | 2336     | 3,08 | 47.5   | 769   | 2523     |

## .338 Winchester Magnum

Test barrel: 620 mm (24½"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Lapua, trim-to length 63,30 mm (2.492")

| Bullet |       |              |           | Powder             | Starting load |      |      |        | Maximum load |          |       |        |       |          |
|--------|-------|--------------|-----------|--------------------|---------------|------|------|--------|--------------|----------|-------|--------|-------|----------|
| Weight |       | Type         | Mfg       |                    | C.O.L.        |      | Type | Weight |              | Velocity |       | Weight |       | Velocity |
| [g]    | [grs] |              |           | [mm]               | [in.]         |      | [g]  | [grs]  | [m/s]        | [fps]    | [g]   | [grs]  | [m/s] | [fps]    |
| 13,0   | 200   | SP           | Hornady   | 85,0 <sup>1)</sup> | 3.346         | N540 | 3,90 | 60.2   | 814          | 2671     | 4,34  | 67.0   | 888   | 2913     |
|        |       |              |           |                    |               | N150 | 3,85 | 59.4   | 801          | 2628     | 4,34  | 67.0   | 873   | 2864     |
|        |       |              |           |                    |               | N550 | 4,15 | 64.0   | 822          | 2697     | 4,61  | 71.1   | 899   | 2949     |
|        |       |              |           |                    |               | N160 | 4,71 | 72.7   | 720          | 2362     | 5,23F | 80.7F  | 905   | 2969     |
| 14,6   | 225   | SP           | Hornady   | 84,0               | 3.307         | N160 | 4,56 | 70.4   | 798          | 2617     | 4,80  | 74.1   | 856   | 2809     |
|        |       |              |           |                    |               | N560 | 4,78 | 73.8   | 820          | 2689     | 5,15  | 79.4   | 849   | 2785     |
| 15,0   | 231   | Naturalis LR | Lapua     | 84,3               | 3.319         | N550 | 3,80 | 58.6   | 752          | 2467     | 4,31  | 66.5   | 838   | 2749     |
|        |       |              |           |                    |               | N160 | 4,25 | 65.6   | 751          | 2464     | 4,74  | 73.1   | 843   | 2766     |
|        |       |              |           |                    |               | N560 | 4,50 | 69.4   | 769          | 2523     | 4,85F | 74.8F  | 832   | 2730     |
| 16,2   | 250   | Grand Slam   | Speer     | 83,8               | 3.299         | N160 | 4,49 | 69.3   | 753          | 2470     | 4,83  | 74.5   | 809   | 2655     |
|        |       |              |           |                    |               | N165 | 4,81 | 74.3   | 766          | 2511     | 5,19  | 80.0   | 823   | 2698     |
| 16,2   | 250   | SBT          | Sierra    | 84,8               | 3.339         | N160 | 4,25 | 65.6   | 758          | 2488     | 4,58  | 70.7   | 810   | 2659     |
|        |       |              |           |                    |               | N560 | 4,39 | 67.7   | 774          | 2540     | 4,78  | 73.7   | 831   | 2728     |
|        |       |              |           |                    |               | N165 | 4,63 | 71.4   | 779          | 2555     | 5,02  | 77.4   | 835   | 2738     |
| 16,2   | 250   | Scenar       | Lapua     | 84,0               | 3.307         | N550 | 4,06 | 62.7   | 765          | 2509     | 4,27  | 65.8   | 810   | 2657     |
|        |       |              |           |                    |               | N160 | 4,23 | 65.3   | 760          | 2494     | 4,55  | 70.1   | 813   | 2669     |
|        |       |              |           |                    |               | N560 | 4,72 | 72.9   | 787          | 2581     | 5,03  | 77.5   | 843   | 2765     |
| 17,8   | 275   | SP           | Speer     | 85,0 <sup>1)</sup> | 3.346         | N165 | 4,63 | 71.5   | 731          | 2398     | 5,01  | 77.3   | 785   | 2576     |
| 17,8   | 275   | A-Frame      | Swift     | 86,5 <sup>1)</sup> | 3.406         | N160 | 3,55 | 54.8   | 634          | 2080     | 4,15  | 64.0   | 717   | 2352     |
|        |       |              |           |                    |               | N560 | 3,76 | 58.0   | 651          | 2136     | 4,30  | 66.3   | 731   | 2398     |
|        |       |              |           |                    |               | N165 | 3,79 | 58.5   | 651          | 2136     | 4,35  | 67.1   | 725   | 2379     |
| 19,4   | 300   | HPBT         | Sierra    | 84,8               | 3.339         | N160 | 4,06 | 62.7   | 692          | 2270     | 4,43  | 68.3   | 745   | 2445     |
|        |       |              |           |                    |               | N560 | 4,20 | 64.7   | 700          | 2295     | 4,66  | 71.9   | 756   | 2479     |
| 19,4   | 300   | RNSP         | Woodleigh | 83,5               | 3.287         | N160 | 3,58 | 55.2   | 626          | 2054     | 4,10  | 63.3   | 692   | 2270     |
|        |       |              |           |                    |               | N560 | 3,92 | 60.5   | 658          | 2159     | 4,55  | 70.2   | 731   | 2398     |
|        |       |              |           |                    |               | N165 | 3,92 | 60.5   | 637          | 2090     | 4,46  | 68.8   | 711   | 2333     |

F = Case full

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.



# .338 Lapua Magnum

Test barrel: 700 mm (27½"), 1 in 10" twist  
 Primers: Large Rifle Magnum  
 Cases: Lapua, trim-to length 69,00 mm (2.714")

| Bullet |       |              |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|--------------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type         | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |              |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 13,0   | 200   | SP           | Hornady | 91,0 3.583 | N160   | 5,81          | 89.6   | 926   | 3038     | 6,22         | 96.0   | 993   | 3259     |
|        |       |              |         |            |        | N165          | 6,24   | 96.3  | 935      | 3068         | 6,66   | 102.8 | 1005     |
| 14,6   | 225   | SP           | Hornady | 91,0 3.583 | N160   | 5,07          | 78.3   | 830   | 2723     | 5,64         | 87.0   | 900   | 2953     |
|        |       |              |         |            | N560   | 5,35          | 82.6   | 865   | 2838     | 5,86         | 90.5   | 934   | 3065     |
|        |       |              |         |            | N165   | 5,40          | 83.2   | 839   | 2753     | 6,01         | 92.8   | 915   | 3000     |
| 15,0   | 231   | Naturalis LR | Lapua   | 90,5 3.563 | N170   | 5,75          | 88.8   | 847   | 2779     | 6,33         | 97.6   | 917   | 3009     |
|        |       |              |         |            | N160   | 4,73          | 73.0   | 793   | 2602     | 5,35         | 82.6   | 876   | 2874     |
|        |       |              |         |            | N560   | 5,19          | 80.1   | 817   | 2680     | 5,75         | 88.7   | 913   | 2995     |
|        |       |              |         |            | N165   | 5,00          | 77.2   | 797   | 2615     | 5,80         | 89.5   | 897   | 2943     |
| 16,2   | 250   | Lock Base    | Lapua   | 91,5 3.602 | N560   | 5,05          | 78.0   | 812   | 2663     | 5,56         | 85.9   | 879   | 2883     |
|        |       |              |         |            | N165   | 4,85          | 74.9   | 780   | 2558     | 5,74         | 88.5   | 886   | 2906     |
|        |       |              |         |            | N170   | 5,19          | 80.1   | 785   | 2577     | 5,90         | 91.0   | 858   | 2816     |
| 16,2   | 250   | Scenar       | Lapua   | 93,5 3.681 | N570   | 5,80          | 89.5   | 821   | 2694     | 6,42F        | 99.1F  | 916   | 3005     |
|        |       |              |         |            | N560   | 4,83          | 74.5   | 802   | 2630     | 5,33         | 82.2   | 866   | 2841     |
|        |       |              |         |            | N165   | 4,89          | 75.5   | 789   | 2589     | 5,39         | 83.2   | 846   | 2775     |
|        |       |              |         |            | N170   | 5,52          | 85.2   | 800   | 2625     | 6,09         | 93.9   | 870   | 2854     |
| 19,4   | 300   | HPBT         | Sierra  | 91,5 3.602 | N570   | 5,75          | 88.7   | 823   | 2700     | 6,40F        | 98.8F  | 911   | 2989     |
|        |       |              |         |            | N165   | 4,57          | 70.5   | 695   | 2281     | 5,20         | 80.2   | 766   | 2513     |
|        |       |              |         |            | N560   | 4,70          | 72.5   | 722   | 2370     | 5,37         | 82.8   | 800   | 2624     |
|        |       |              |         |            | N170   | 5,15          | 79.4   | 719   | 2360     | 5,86         | 90.4   | 792   | 2599     |
|        |       |              |         |            | N570   | 5,39          | 83.2   | 776   | 2546     | 5,92         | 91.3   | 826   | 2710     |
|        |       |              |         |            | 24N41  | 5,52          | 85.2   | 735   | 2410     | 6,28         | 96.8   | 809   | 2653     |

F = Case full  
  = Accuracy load

# 9,3 x 62

Test barrel: 580 mm (22¾"), 1 in 14" twist  
 Primers: Large Rifle  
 Cases: Lapua, trim-to length 61,80 mm (2.433")

| Bullet |       |              |           |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|--------------|-----------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type         | Mfg       | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |              |           | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 14,5   | 224   | Naturalis LR | Lapua     | 82,0 3.228 | N530   | 3,01          | 46.4   | 687   | 2254     | 3,48         | 53.7   | 792   | 2598     |
|        |       |              |           |            | N135   | 2,95          | 45.5   | 662   | 2172     | 3,67         | 56.6   | 782   | 2566     |
|        |       |              |           |            | N140   | 3,49          | 53.9   | 733   | 2405     | 3,88         | 59.9   | 807   | 2648     |
| 17,5   | 270   | Naturalis    | Lapua     | 82,5 3.248 | N135   | 2,80          | 43.2   | 642   | 2106     | 3,30         | 50.9   | 699   | 2293     |
|        |       |              |           |            | N140   | 3,39          | 52.3   | 673   | 2208     | 3,70         | 57.1   | 733   | 2405     |
|        |       |              |           |            | N540   | 3,52          | 54.3   | 679   | 2228     | 3,77         | 58.2   | 731   | 2398     |
|        |       |              |           |            | N150   | 3,50          | 54.0   | 684   | 2244     | 3,82         | 58.9   | 745   | 2444     |
|        |       |              |           |            | N135   | 2,85          | 44.0   | 605   | 1985     | 3,14         | 48.5   | 676   | 2218     |
| 18,5   | 285   | Mega         | Lapua     | 82,2 3.236 | N140   | 3,00          | 46.3   | 614   | 2014     | 3,39         | 52.3   | 673   | 2208     |
|        |       |              |           |            | N540   | 3,05          | 47.1   | 607   | 1991     | 3,50         | 54.0   | 694   | 2277     |
|        |       |              |           |            | N540   | 3,45          | 53.2   | 630   | 2067     | 3,72         | 57.4   | 684   | 2244     |
| 20,7   | 320   | RNSP         | Woodleigh | 82,0 3.228 | N150   | 3,50          | 54.0   | 627   | 2057     | 3,73         | 57.6   | 675   | 2215     |
|        |       |              |           |            | N550   | 3,70          | 57.1   | 636   | 2087     | 4,04         | 62.3   | 700   | 2297     |

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

# 9,3 x 66 Sako

Test barrel: 630 mm (24¾"), 1 in 14" twist  
 Primers: Large Rifle  
 Cases: Sako, trim-to length 65,80 mm (2.591")

| Bullet |       |           |           |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|-----------|-----------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type      | Mfg       | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |           |           | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 17,5   | 270   | Naturalis | Lapua     | 85,0 3.346 | N140   | 3,40          | 52.5   | 684   | 2244     | 4,00         | 61.7   | 773   | 2536     |
|        |       |           |           |            | N540   | 3,84          | 59.3   | 736   | 2415     | 4,15         | 64.0   | 789   | 2589     |
| 19,4   | 300   | A-Frame   | Swift     | 84,0 3.307 | N550   | 4,13          | 63.7   | 745   | 2444     | 4,37F        | 67.4F  | 791   | 2595     |
|        |       |           |           |            | N540   | 3,06          | 47.2   | 622   | 2041     | 3,53         | 54.5   | 689   | 2260     |
|        |       |           |           |            | N150   | 3,09          | 47.7   | 599   | 1965     | 3,42         | 52.8   | 670   | 2198     |
| 20,7   | 320   | RNSP      | Woodleigh | 85,0 3.346 | N550   | 3,50          | 54.0   | 658   | 2159     | 3,75         | 57.9   | 702   | 2303     |
|        |       |           |           |            | N540   | 3,47          | 53.5   | 678   | 2224     | 3,91         | 60.3   | 713   | 2339     |
|        |       |           |           |            | N150   | 3,44          | 53.1   | 602   | 1975     | 3,80         | 58.6   | 698   | 2290     |
|        |       |           |           |            | N550   | 3,70          | 57.1   | 650   | 2133     | 4,25         | 65.6   | 733   | 2405     |

F = Case full

# 9,3 x 74R

Test barrel: 610 mm (24"), 1 in 14" twist  
 Primers: Large Rifle  
 Cases: RWS, trim-to length 74,50 mm (2.933")

| Bullet |       |              |           |                          | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|--------------|-----------|--------------------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type         | Mfg       | C.O.L.                   |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |              |           | [mm] [in.]               |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 12,5   | 193   | JFP          | S&B       | 88,9 3.500               | N120   | 2,98          | 46.0   | 744   | 2441     | 3,33         | 51.4   | 810   | 2656     |
|        |       |              |           |                          | N130   | 3,42          | 52.8   | 791   | 2595     | 3,66         | 56.5   | 837   | 2746     |
| 14,5   | 224   | Naturalis LR | Lapua     | 94,4 3.717               | N530   | 3,04          | 46.9   | 708   | 2323     | 3,40         | 52.5   | 782   | 2566     |
|        |       |              |           |                          | N135   | 3,02          | 46.6   | 702   | 2303     | 3,50         | 54.0   | 780   | 2559     |
|        |       |              |           |                          | N140   | 3,39          | 52.3   | 721   | 2365     | 3,88         | 59.9   | 806   | 2644     |
|        |       |              |           |                          | N140   | 3,72          | 57.4   | 718   | 2356     | 4,29         | 66.2   | 810   | 2656     |
| 15,0   | 231   | SP           | Norma     | 92,1 3.626               | N140   | 3,72          | 57.4   | 718   | 2356     | 4,29         | 66.2   | 810   | 2656     |
| 16,6   | 256   | SP           | Sako      | 92,2 3.630               | N140   | 3,50          | 54.0   | 654   | 2146     | 4,00         | 61.8   | 751   | 2463     |
| 17,5   | 270   | Naturalis    | Lapua     | 94,0 3.701               | N135   | 3,10          | 47.8   | 649   | 2129     | 3,30         | 50.9   | 706   | 2316     |
|        |       |              |           |                          | N140   | 3,30          | 50.9   | 656   | 2152     | 3,75         | 57.9   | 716   | 2349     |
|        |       |              |           |                          | N540   | 3,48          | 53.7   | 655   | 2149     | 3,83         | 59.1   | 723   | 2372     |
|        |       |              |           |                          | N140   | 3,45          | 53.2   | 636   | 2087     | 3,78         | 58.3   | 694   | 2277     |
|        |       |              |           |                          | N540   | 3,24          | 50.0   | 618   | 2028     | 3,78         | 58.3   | 701   | 2300     |
| 19,0   | 293   | TUG          | RWS       | 95,5 <sup>1)</sup> 3.760 | N140   | 3,42          | 52.7   | 637   | 2088     | 3,72         | 57.4   | 695   | 2281     |
| 19,4   | 300   | A-Frame      | Swift     | 92,2 3.630               | N135   | 2,70          | 41.7   | 547   | 1795     | 2,94         | 45.4   | 593   | 1946     |
|        |       |              |           |                          | N140   | 2,90          | 44.7   | 562   | 1844     | 3,21         | 49.5   | 613   | 2011     |
|        |       |              |           |                          | N540   | 3,04          | 46.9   | 575   | 1886     | 3,40         | 52.5   | 636   | 2087     |
| 20,7   | 320   | RNSP         | Woodleigh | 94,0 3.701               | N135   | 2,90          | 44.7   | 544   | 1785     | 3,18         | 49.1   | 601   | 1972     |
|        |       |              |           |                          | N140   | 3,08          | 47.5   | 558   | 1831     | 3,37         | 52.0   | 610   | 2001     |
|        |       |              |           |                          | N540   | 3,15          | 48.6   | 571   | 1873     | 3,48         | 53.7   | 630   | 2067     |

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.

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

## .375 H&H Magnum

Test barrel: 620 mm (24½"), 1 in 12" twist  
 Primers: Large Rifle Magnum  
 Cases: Remington, trim-to length 72,20 mm (2.842")

| Bullet |       |            |           |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------------|-----------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type       | Mfg       | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |            |           | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 15,2   | 235   | Spitzer    | Speer     | 91,0   | 3.583  | N140          | 4,55   | 70.2  | 816      | 2677         | 4,91   | 75.8  | 879      | 2884  |
|        |       |            |           |        |        | N540          | 4,11   | 63.4  | 729      | 2392         | 5,18   | 79.9  | 890      | 2920  |
|        |       |            |           |        |        | N150          | 4,75   | 73.3  | 834      | 2736         | 5,10   | 78.7  | 886      | 2907  |
| 16,2   | 250   | SBT        | Sierra    | 91,0   | 3.583  | N540          | 4,44   | 68.5  | 797      | 2615         | 4,82   | 74.4  | 856      | 2808  |
|        |       |            |           |        |        | N150          | 4,52   | 69.7  | 799      | 2621         | 4,87   | 75.1  | 852      | 2795  |
| 17,5   | 270   | XFB        | Barnes    | 91,0   | 3.583  | N140          | 3,90   | 60.2  | 635      | 2083         | 4,55   | 70.2  | 787      | 2582  |
|        |       |            |           |        |        | N540          | 4,20   | 64.8  | 727      | 2385         | 4,76   | 73.4  | 813      | 2667  |
|        |       |            |           |        |        | N150          | 4,25   | 65.6  | 723      | 2372         | 4,71   | 72.7  | 796      | 2612  |
| 17,5   | 270   | SP         | Speer     | 91,0   | 3.583  | N140          | 4,00   | 61.7  | 718      | 2356         | 4,57   | 70.5  | 805      | 2641  |
|        |       |            |           |        |        | N540          | 4,32   | 66.7  | 767      | 2516         | 4,71   | 72.7  | 825      | 2707  |
|        |       |            |           |        |        | N150          | 4,36   | 67.3  | 769      | 2523         | 4,87   | 75.1  | 830      | 2723  |
| 17,5   | 270   | RNSP       | Woodleigh | 91,0   | 3.583  | N135          | 3,85   | 59.4  | 707      | 2320         | 4,27   | 65.9  | 771      | 2530  |
|        |       |            |           |        |        | N540          | 4,45   | 68.7  | 766      | 2513         | 4,85   | 74.8  | 827      | 2713  |
|        |       |            |           |        |        | N150          | 4,20   | 64.8  | 735      | 2411         | 4,70   | 72.5  | 799      | 2621  |
| 18,5   | 285   | Grand Slam | Speer     | 91,0   | 3.583  | N140          | 3,90   | 60.2  | 665      | 2182         | 4,41   | 68.0  | 784      | 2572  |
|        |       |            |           |        |        | N540          | 4,22   | 65.1  | 732      | 2402         | 4,60   | 71.0  | 790      | 2592  |
|        |       |            |           |        |        | N150          | 4,21   | 65.0  | 733      | 2405         | 4,69   | 72.4  | 792      | 2598  |
| 19,4   | 300   | A-Frame    | Swift     | 91,0   | 3.583  | N140          | 3,75   | 57.9  | 657      | 2156         | 4,27   | 65.9  | 736      | 2415  |
|        |       |            |           |        |        | N540          | 4,02   | 62.0  | 692      | 2270         | 4,34   | 67.0  | 743      | 2438  |
|        |       |            |           |        |        | N150          | 3,70   | 57.1  | 650      | 2133         | 4,24   | 65.4  | 726      | 2382  |

## .416 Rigby

Test barrel: 620 mm (24½"), 1 in 14" twist  
 Primers: Large Rifle Magnum  
 Cases: Norma, trim-to length 73,40 mm (2.890")

| Bullet |       |         |           |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|-----------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg       | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |           | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 22,7   | 350   | A-Frame | Swift     | 92,0   | 3.622  | N160          | 5,45   | 84.1  | 679      | 2228         | 5,95   | 91.8  | 736      | 2415  |
|        |       |         |           |        |        | N560          | 5,73   | 88.4  | 685      | 2247         | 6,02   | 92.9  | 728      | 2388  |
|        |       |         |           |        |        | N165          | 5,55   | 85.6  | 682      | 2238         | 6,25   | 96.4  | 747      | 2451  |
| 25,9   | 400   | XFB     | Barnes    | 94,5   | 3.720  | N160          | 4,70   | 72.5  | 599      | 1965         | 5,40   | 83.3  | 660      | 2165  |
|        |       |         |           |        |        | N560          | 5,10   | 78.7  | 622      | 2041         | 5,43   | 83.8  | 661      | 2169  |
|        |       |         |           |        |        | N165          | 5,83   | 90.0  | 631      | 2070         | 5,97   | 92.1  | 662      | 2172  |
| 25,9   | 400   | A-Frame | Swift     | 92,0   | 3.622  | N160          | 4,85   | 74.8  | 611      | 2005         | 5,36   | 82.7  | 672      | 2205  |
|        |       |         |           |        |        | N560          | 5,00   | 77.2  | 616      | 2021         | 5,54   | 85.5  | 660      | 2165  |
|        |       |         |           |        |        | N165          | 5,45   | 84.1  | 651      | 2136         | 5,91   | 91.2  | 698      | 2290  |
| 26,6   | 410   | RNSP    | Woodleigh | 92,5   | 3.642  | N160          | 5,43   | 83.8  | 637      | 2090         | 5,80   | 89.5  | 695      | 2280  |
|        |       |         |           |        |        | N560          | 5,86   | 90.4  | 655      | 2149         | 6,28   | 96.9  | 711      | 2333  |
|        |       |         |           |        |        | N165          | 5,93   | 91.5  | 660      | 2165         | 6,42   | 99.1  | 720      | 2362  |
| 29,2   | 450   | RNSP    | Woodleigh | 94,5   | 3.720  | N160          | 5,20   | 80.2  | 614      | 2014         | 5,67   | 87.5  | 663      | 2175  |
|        |       |         |           |        |        | N560          | 5,70   | 88.0  | 633      | 2077         | 6,14   | 94.7  | 680      | 2231  |
|        |       |         |           |        |        | N165          | 5,83   | 90.0  | 631      | 2070         | 6,17   | 95.2  | 682      | 2238  |

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

## .444 Marlin

Test barrel: 560 mm (22"), 1 in 38" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 56,30 mm (2.216")

| Bullet |       |         |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 13,0   | 200   | HP/XTP  | Hornady | 64,4   | 2.535  | N110          | 2,66   | 41.0  | 720      | 2362         | 3,05   | 47.1  | 797      | 2613  |
|        |       |         |         |        |        | N120          | 3,28   | 50.6  | 782      | 2565         | 3,75   | 57.8  | 869      | 2851  |
| 15,6   | 240   | JTC-SIL | Hornady | 64,5   | 2.539  | N120          | 2,91   | 44.9  | 684      | 2243         | 3,43   | 53.0  | 780      | 2560  |
|        |       |         |         |        |        | N130          | 3,23   | 49.8  | 697      | 2286         | 3,68   | 56.8  | 780      | 2558  |
| 17,2   | 265   | FP      | Hornady | 65,0   | 2.559  | N120          | 2,82   | 43.5  | 649      | 2129         | 3,27   | 50.5  | 736      | 2415  |
|        |       |         |         |        |        | N130          | 3,09   | 47.7  | 657      | 2157         | 3,45   | 53.2  | 732      | 2401  |

## .45-70 Government

Test barrel: 560 mm (22"), 1 in 20" twist  
 Primers: Large Rifle  
 Cases: Remington, trim-to length 53,30 mm (2.098")

**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 210 MPa.

| Bullet |       |                  |         |        | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------------------|---------|--------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type             | Mfg     | C.O.L. |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                  |         | [mm]   | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 19,4   | 300   | XFN              | Barnes  | 64,8   | 2.551  | N130               | 3,10   | 47.8  | 547      | 1795         | 3,37   | 52.0  | 602      | 1975  |
|        |       |                  |         |        |        | N130               | 3,11   | 48.0  | 522      | 1713         | 3,46   | 53.4  | 614      | 2014  |
| 22,7   | 350   | RN               | Hornady | 64,7   | 2.547  | N133               | 3,26   | 50.3  | 507      | 1663         | 3,72   | 57.4  | 621      | 2037  |
|        |       |                  |         |        |        | N530               | 3,45   | 53.2  | 509      | 1670         | 3,82   | 58.9  | 606      | 1988  |
|        |       |                  |         |        |        | N130               | 2,90   | 44.7  | 489      | 1604         | 3,22   | 49.7  | 559      | 1834  |
| 25,9   | 400   | FN               | Speer   | 64,7   | 2.547  | N133               | 3,06   | 47.2  | 485      | 1591         | 3,40   | 52.5  | 574      | 1883  |
|        |       |                  |         |        |        | N530               | 3,20   | 49.4  | 478      | 1568         | 3,52   | 54.3  | 568      | 1864  |
|        |       |                  |         |        |        | N120 <sup>1)</sup> | 1,70   | 26.2  | 360      | 1181         | 1,90   | 29.3  | 408      | 1339  |
| 33,1   | 510   | LFN w/ gas check | Gunhill | 64,7   | 2.547  | N130 <sup>1)</sup> | 2,00   | 30.9  | 389      | 1276         | 2,30   | 35.5  | 495      | 1624  |

<sup>1)</sup> Cowboy Action Shooting load

## .458 Winchester Magnum

Test barrel: 635 mm (25"), 1 in 14" twist  
 Primers: Large Rifle Magnum  
 Cases: Winchester, trim-to length 63,30 mm (2.492")

| Bullet |       |         |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 22,7   | 350   | RN      | Hornady | 74,9   | 2.949  | N120          | 4,13   | 63.7  | 712      | 2336         | 4,53   | 69.9  | 748      | 2454  |
|        |       |         |         |        |        | N130          | 4,46   | 68.8  | 730      | 2395         | 4,80   | 74.1  | 773      | 2536  |
|        |       |         |         |        |        | N133          | 4,72   | 72.8  | 730      | 2395         | 4,90F  | 75.6F | 756      | 2480  |
| 25,9   | 400   | A-Frame | Swift   | 82,0   | 3.228  | N130          | 4,30   | 66.3  | 674      | 2211         | 4,55   | 70.2  | 710      | 2329  |
|        |       |         |         |        |        | N530          | 4,90   | 75.6  | 691      | 2267         | 5,10F  | 78.7F | 722      | 2369  |
|        |       |         |         |        |        | N135          | 4,80   | 74.1  | 677      | 2221         | 4,90F  | 75.6F | 692      | 2270  |
| 25,9   | 400   | XFB     | Barnes  | 83,0   | 3.268  | N130          | 4,00   | 61.7  | 631      | 2070         | 4,36   | 67.3  | 688      | 2257  |
|        |       |         |         |        |        | N530          | 4,50   | 69.4  | 645      | 2116         | 4,70F  | 72.5F | 674      | 2211  |
|        |       |         |         |        |        | N135          | 4,30   | 66.3  | 625      | 2051         | 4,42F  | 68.2F | 644      | 2113  |
| 32,4   | 500   | RN      | Hornady | 84,0   | 3.307  | N130          | 3,60   | 55.5  | 557      | 1827         | 4,11   | 63.4  | 623      | 2044  |
|        |       |         |         |        |        | N133          | 3,85   | 59.4  | 564      | 1850         | 4,52   | 69.7  | 645      | 2116  |
|        |       |         |         |        |        | N530          | 4,20   | 64.8  | 589      | 1932         | 4,76   | 73.4  | 655      | 2149  |

F = Case full

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

# .50 Browning

Test barrel: 1140 mm (45"), 1 in 16½" twist  
 Primers: CCI35  
 Cases: IMI, trim-to length 99,10 mm (3.902")

| Bullet |       |          |         |             | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|----------|---------|-------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type     | Mfg     | C.O.L.      |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |          |         | [mm] [in.]  |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 41,9   | 647   | FMJBT    | Speer   | 137,5 5.413 | N170   | 13,03         | 201.1  | 801   | 2629     | 14,76        | 227.8  | 894   | 2932     |
|        |       |          |         |             | 24N41  | 13,86         | 213.8  | 819   | 2688     | 14,72        | 227.2  | 888   | 2915     |
|        |       |          |         |             | 20N29  | 15,53         | 239.7  | 836   | 2744     | 16,61        | 256.3  | 922   | 3024     |
| 45,4   | 700   | Solid    | Barnes  | 137,5 5.413 | 24N41  | 13,69         | 211.2  | 808   | 2652     | 15,00        | 231.5  | 887   | 2910     |
|        |       |          |         |             | 20N29  | 15,27         | 235.6  | 819   | 2687     | 16,61        | 256.3  | 908   | 2978     |
| 48,6   | 750   | A-MAX    | Hornady | 137,5 5.413 | N170   | 12,31         | 190.0  | 759   | 2490     | 13,99        | 215.8  | 842   | 2763     |
|        |       |          |         |             | 24N41  | 12,97         | 200.2  | 764   | 2508     | 14,13        | 218.0  | 843   | 2765     |
|        |       |          |         |             | 20N29  | 14,59         | 225.2  | 779   | 2556     | 15,97        | 246.4  | 862   | 2829     |
| 48,6   | 750   | Bullex-N | Lapua   | 138,0 5.433 | 24N41  | 13,83         | 213.4  | 798   | 2618     | 14,93        | 230.4  | 865   | 2838     |
|        |       |          |         |             | 20N29  | 15,57         | 240.3  | 826   | 2710     | 16,58        | 255.9  | 895   | 2936     |
| 48,6   | 750   | Solid    | Barnes  | 137,5 5.413 | 24N41  | 13,26         | 204.6  | 768   | 2520     | 14,54        | 224.4  | 858   | 2815     |
|        |       |          |         |             | 20N29  | 14,64         | 226.0  | 782   | 2565     | 16,23        | 250.5  | 871   | 2857     |
| 51,8   | 800   | Bullex-N | Lapua   | 137,5 5.413 | 24N41  | 12,93         | 199.5  | 756   | 2480     | 14,23        | 219.6  | 826   | 2710     |
|        |       |          |         |             | 20N29  | 14,95         | 230.7  | 796   | 2612     | 15,79        | 243.7  | 857   | 2812     |
| 51,8   | 800   | Solid    | Barnes  | 137,5 5.413 | 24N41  | 11,79         | 181.9  | 722   | 2369     | 12,84        | 198.1  | 790   | 2592     |
|        |       |          |         |             | 20N29  | 14,19         | 219.1  | 779   | 2557     | 15,88        | 245.0  | 850   | 2788     |
| 55,1   | 850   | Solid    | Barnes  | 137,5 5.413 | 24N41  | 12,34         | 190.5  | 716   | 2349     | 13,50        | 208.3  | 784   | 2573     |
|        |       |          |         |             | 20N29  | 13,91         | 214.7  | 746   | 2447     | 15,42        | 238.0  | 828   | 2716     |



LIGHT GREY TEXT BOX 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 Nammo Lapua Oy. The data given here were obtained in laboratory conditions following strictly the CIP (Commission Internationale Permanente) June 13, 1990 and November 9, 1993 rules. The listed maximum loads have been determined according to the respective CIP/SAAMI maximum pressure specification, 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.

DO NOT ATTEMPT ANY EXTRAPOLATIONS. PLEASE FOLLOW THE DATA AS WRITTEN.  
 IT IS A MUST FOR EVERY RELOADER TO READ THE RELOADING SAFETY RULES ON THE PAGES 12 AND 13 OF THIS GUIDE.

## 7 mm TCU

Test barrel: 360 mm (14"), 1 in 10" twist  
 Primers: Small Rifle  
 Cases: Necked-up LAPUA .223 Rem., trim-to length 44,50 mm (1.752")

| Bullet |       |         |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|---------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type    | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |         |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 6,5    | 100   | HP      | Hornady | 62,5 2.461 | N120   | 1,48          | 22.8   | 667   | 2188     | 1,64         | 25.3   | 744   | 2441     |
|        |       |         |         |            | N130   | 1,62          | 25.0   | 672   | 2205     | 1,79         | 27.6   | 753   | 2470     |
|        |       |         |         |            | N133   | 1,77          | 27.3   | 695   | 2280     | 1,96         | 30.2   | 774   | 2539     |
| 7,8    | 120   | SSSP    | Hornady | 63,5 2.500 | N120   | 1,32          | 20.4   | 606   | 1988     | 1,45         | 22.4   | 655   | 2149     |
|        |       |         |         |            | N130   | 1,45          | 22.4   | 610   | 2001     | 1,61         | 24.8   | 673   | 2208     |
|        |       |         |         |            | N133   | 1,62          | 25.0   | 630   | 2067     | 1,81         | 27.9   | 701   | 2300     |
| 8,4    | 130   | Spitzer | Speer   | 65,0 2.559 | N120   | 1,24          | 19.1   | 542   | 1778     | 1,38         | 21.3   | 596   | 1955     |
|        |       |         |         |            | N130   | 1,40          | 21.6   | 573   | 1880     | 1,55         | 23.9   | 626   | 2054     |
|        |       |         |         |            | N133   | 1,46          | 22.5   | 576   | 1890     | 1,62         | 25.0   | 633   | 2077     |
| 9,7    | 150   | SBT     | Sierra  | 65,0 2.559 | N120   | 1,17          | 18.1   | 513   | 1683     | 1,30         | 20.1   | 562   | 1844     |
|        |       |         |         |            | N130   | 1,31          | 20.2   | 535   | 1755     | 1,45         | 22.4   | 586   | 1923     |
|        |       |         |         |            | N133   | 1,38          | 21.3   | 542   | 1778     | 1,53         | 23.6   | 599   | 1965     |
| 10,4   | 160   | SBT     | Sierra  | 66,0 2.598 | N135   | 1,44          | 22.2   | 538   | 1765     | 1,60         | 24.7   | 597   | 1959     |
|        |       |         |         |            | N120   | 1,12          | 17.3   | 480   | 1575     | 1,25         | 19.3   | 531   | 1742     |
|        |       |         |         |            | N130   | 1,26          | 19.4   | 505   | 1657     | 1,41         | 21.8   | 558   | 1831     |
|        |       |         |         |            | N133   | 1,31          | 20.2   | 511   | 1677     | 1,45         | 22.4   | 559   | 1834     |
|        |       |         |         |            | N135   | 1,45          | 22.4   | 531   | 1742     | 1,61         | 24.8   | 582   | 1909     |
| N540   | 1,48  | 22.8    | 544     | 1785       | 1,63   | 25.2          | 598    | 1962  |          |              |        |       |          |

NOTE: This cartridge is not supported by CIP or SAAMI. The maximum loads do not exceed 300 MPa.

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

## 7 mm BR Remington

Test barrel: 375 mm (14½"), 1 in 10" twist  
 Primers: Small Rifle  
 Cases: Remington, trim-to length 38,40 mm (1.512")

| Bullet |       |               |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,5    | 100   | HP            | Hornady | 56,0   | 2.205  | N120          | 1,82   | 28.0  | 774      | 2539         | 1,93   | 29.8  | 829      | 2720  |
|        |       |               |         |        |        | N130          | 1,97   | 30.5  | 783      | 2568         | 2,10   | 32.4  | 838      | 2749  |
| 7,8    | 120   | SSSP          | Hornady | 56,6   | 2.228  | N120          | 1,67   | 25.8  | 687      | 2255         | 1,80   | 27.8  | 738      | 2421  |
|        |       |               |         |        |        | N130          | 1,81   | 27.9  | 707      | 2318         | 1,94   | 29.9  | 784      | 2572  |
|        |       |               |         |        |        | N133          | 1,94   | 30.0  | 714      | 2343         | 2,11   | 32.6  | 771      | 2530  |
| 9,1    | 140   | Ballistic Tip | Nosler  | 60,3   | 2.374  | N120          | 1,45   | 22.4  | 595      | 1954         | 1,58   | 24.4  | 640      | 2100  |
|        |       |               |         |        |        | N130          | 1,62   | 25.0  | 612      | 2006         | 1,73   | 26.7  | 661      | 2169  |
|        |       |               |         |        |        | N133          | 1,71   | 26.3  | 623      | 2044         | 1,84   | 28.4  | 671      | 2201  |
| 9,7    | 150   | Ballistic Tip | Nosler  | 60,3   | 2.374  | N120          | 1,42   | 21.9  | 576      | 1890         | 1,54   | 23.8  | 619      | 2031  |
|        |       |               |         |        |        | N130          | 1,54   | 23.8  | 589      | 1931         | 1,67   | 25.8  | 635      | 2083  |
|        |       |               |         |        |        | N133          | 1,62   | 25.1  | 595      | 1952         | 1,77   | 27.3  | 642      | 2106  |
| 10,4   | 160   | HPBT          | Sierra  | 59,7   | 2.350  | N135          | 1,75   | 27.0  | 606      | 1988         | 1,87   | 28.9  | 650      | 2133  |
|        |       |               |         |        |        | N120          | 1,30   | 20.1  | 539      | 1770         | 1,42   | 21.9  | 580      | 1903  |
|        |       |               |         |        |        | N130          | 1,42   | 21.9  | 559      | 1834         | 1,55   | 23.9  | 602      | 1975  |
|        |       |               |         |        |        | N133          | 1,56   | 24.1  | 575      | 1886         | 1,69   | 26.1  | 619      | 2031  |
|        |       |               |         |        |        | N135          | 1,67   | 25.8  | 588      | 1929         | 1,79   | 27.6  | 630      | 2067  |

## 7 mm GJW

Test barrel: 380 mm (15"), 1 in 8" twist  
 Primers: Small Rifle  
 Cases: Munitionsfabrik Thun, trim-to length 48,80 mm (1.920")

| Bullet |       |               |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type          | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |               |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 9,7    | 150   | Ballistic Tip | Nosler | 75,0   | 2.953  | N130          | 1,58   | 24.4  | 613      | 2013         | 1,67   | 25.8  | 642      | 2106  |
|        |       |               |        |        |        | N133          | 1,65   | 25.5  | 614      | 2013         | 1,74   | 26.8  | 644      | 2113  |
|        |       |               |        |        |        | N135          | 1,78   | 27.5  | 629      | 2065         | 1,86   | 28.7  | 658      | 2159  |
| 10,9   | 168   | HPBT          | Sierra | 75,0   | 2.953  | N130          | 1,54   | 23.7  | 583      | 1913         | 1,63   | 25.2  | 611      | 2005  |
|        |       |               |        |        |        | N133          | 1,62   | 25.1  | 587      | 1927         | 1,71   | 26.4  | 617      | 2024  |
|        |       |               |        |        |        | N135          | 1,76   | 27.1  | 605      | 1984         | 1,83   | 28.2  | 631      | 2070  |
|        |       |               |        |        |        | N140          | 1,83   | 28.2  | 607      | 1991         | 1,91   | 29.5  | 636      | 2087  |

## 7,62 x 25 Tokarev

Test barrel: 150 mm (6"), 1 in 10" twist, groove calibre 7,85 mm (0.309")  
 Primers: Large Pistol  
 Cases: Fiocchi 7,63 Mauser, trim-to length 24,80 mm (0.976")

NOTE: FOR FIREARMS CHAMBERED FOR THE 7,62 x 25 TOKAREV CARTRIDGE ONLY.

| Bullet |       |                   |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------------------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type              | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                   |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 3,9    | 60    | HP <sup>2)</sup>  | Speer  | 32,0   | 1.260  | N320          | 0,29   | 4.4   | 391      | 1284         | 0,36   | 5.5   | 480      | 1574  |
|        |       |                   |        |        |        | N340          | 0,39   | 5.9   | 434      | 1425         | 0,46   | 7.1   | 522      | 1713  |
| 4,6    | 71    | FMJ <sup>2)</sup> | Sierra | 33,0   | 1.299  | N340          | 0,36   | 5.5   | 410      | 1345         | 0,43   | 6.7   | 478      | 1569  |
|        |       |                   |        |        |        | 3N37          | 0,39   | 6.0   | 412      | 1352         | 0,49   | 7.6   | 493      | 1616  |
|        |       |                   |        |        |        | 3N38          | 0,53   | 8.1   | 471      | 1546         | 0,61   | 9.5   | 521      | 1708  |
| 4,8    | 74    | FMJ <sup>1)</sup> | Lapua  | 33,0   | 1.299  | N340          | 0,35   | 5.5   | 406      | 1331         | 0,43   | 6.6   | 471      | 1546  |
|        |       |                   |        |        |        | 3N37          | 0,39   | 5.9   | 403      | 1322         | 0,49   | 7.6   | 478      | 1569  |

<sup>1)</sup> Bullet cal. 7,84 mm (0,309")

<sup>2)</sup> Bullet cal. 7,92 mm (0,312")

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

## 7,62 x 25 Tokarev

Test barrel: 150 mm (6"), 1 in 10" twist, groove calibre 7,85 mm (0.309")  
 Primers: Large Pistol  
 Cases: Fiocchi 7,63 Mauser, trim-to length 24,80 mm (0.976")

NOTE: FOR FIREARMS CHAMBERED FOR THE 7,62 x 25 TOKAREV CARTRIDGE ONLY.

| Bullet |       |                   |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------------------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type              | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |                   |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,8    | 90    | JHC <sup>2)</sup> | Sierra | 32,5   | 1.280  | N340          | 0,29   | 4.5   | 308      | 1011         | 0,37   | 5.7   | 405      | 1329  |
|        |       |                   |        |        |        | 3N37          | 0,34   | 5.2   | 340      | 1116         | 0,43   | 6.6   | 416      | 1366  |
|        |       |                   |        |        |        | 3N38          | 0,46   | 7.1   | 404      | 1326         | 0,53   | 8.1   | 452      | 1482  |
| 6,0    | 93    | FMJ <sup>1)</sup> | Lapua  | 34,0   | 1.339  | N340          | 0,31   | 4.7   | 342      | 1122         | 0,39   | 5.9   | 401      | 1316  |
|        |       |                   |        |        |        | 3N37          | 0,33   | 5.1   | 349      | 1146         | 0,46   | 7.1   | 418      | 1370  |
|        |       |                   |        |        |        | 3N38          | 0,43   | 6.6   | 378      | 1241         | 0,56   | 8.6   | 445      | 1460  |

<sup>1)</sup> Bullet cal. 7,84 mm (0,309")

<sup>2)</sup> Bullet cal. 7,92 mm (0,312")

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

Test barrel: 175 mm (7"), 1 in 18½" twist  
 Primers: Small Pistol  
 Cases: Lapua, trim-to length 23,20 mm (0.913")

| Bullet |       |      |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,4    | 83    | LWC  | Lapua | 24,6   | 0.969  | N310          | 0,09   | 1.4   | 231      | 758          | 0,11   | 1.7   | 258      | 846   |
| 6,4    | 98    | LWC  | Lapua | 24,6   | 0.969  | N310          | 0,07   | 1.1   | 186      | 610          | 0,08   | 1.2   | 208      | 682   |
|        |       | LRN  | Lapua | 32,3   | 1.272  | N310          | 0,12   | 1.9   | 256      | 840          | 0,14   | 2.2   | 277      | 909   |

## .32 S&W Long Wadcutter

Test barrel: 150 mm (6"), 1 in 18¼" twist  
 Primers: Small Pistol  
 Cases: Lapua, trim-to length 23,20 mm (0.913")

| Bullet |       |      |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,4    | 83    | LWC  | Lapua | 24,6   | 0.969  | N310          | 0,11   | 1.7   | 246      | 807          | 0,13   | 2.0   | 286      | 938   |
| 6,4    | 98    | LWC  | Lapua | 24,6   | 0.969  | N310          | 0,09   | 1.4   | 233      | 764          | 0,12   | 1.9   | 257      | 843   |

## 9 mm Luger

Test barrel: 100 mm (4"), 1 in 10" twist  
 Primers: Small Pistol  
 Cases: Lapua, trim-to length 19,00 mm (0.748")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 5,8    | 90    | HP-XTP | Hornady | 27,0   | 1.063  | N310          | 0,26   | 3.9   | 369      | 1212         | 0,27   | 4.2   | 384      | 1260  |
|        |       |        |         |        |        | N320          | 0,31   | 4.8   | 401      | 1316         | 0,34   | 5.3   | 421      | 1380  |
|        |       |        |         |        |        | N330          | 0,36   | 5.6   | 420      | 1379         | 0,39   | 6.1   | 439      | 1440  |
|        |       |        |         |        |        | N340          | 0,36   | 5.5   | 423      | 1387         | 0,40   | 6.2   | 452      | 1483  |
|        |       |        |         |        |        | N350          | 0,42   | 6.4   | 424      | 1391         | 0,47   | 7.2   | 456      | 1496  |
| 6,5    | 100   | HP     | Speer   | 27,5   | 1.083  | 3N37          | 0,42   | 6.4   | 437      | 1434         | 0,47   | 7.2   | 461      | 1512  |
|        |       |        |         |        |        | N320          | 0,30   | 4.7   | 373      | 1222         | 0,33   | 5.1   | 398      | 1307  |
|        |       |        |         |        |        | N330          | 0,35   | 5.4   | 393      | 1290         | 0,38   | 5.9   | 416      | 1365  |
|        |       |        |         |        |        | N340          | 0,37   | 5.7   | 393      | 1290         | 0,42   | 6.4   | 429      | 1407  |
|        |       |        |         |        |        | 3N37          | 0,42   | 6.4   | 398      | 1306         | 0,47   | 7.3   | 434      | 1423  |

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



# 9 mm Luger

Test barrel: 100 mm (4"), 1 in 10" twist  
 Primers: Small Pistol  
 Cases: Lapua, trim-to length 19,00 mm (0.748")

| Bullet |       |           |            |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|-----------|------------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type      | Mfg        | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |           |            | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 7,5    | 115   | HP-XTP    | Hornady    | 29,0 1.142 | N320   | 0,26          | 4.0    | 341   | 1118     | 0,29         | 4.5    | 362   | 1188     |
|        |       |           |            |            | N330   | 0,31          | 4.8    | 356   | 1166     | 0,35         | 5.4    | 381   | 1251     |
|        |       |           |            |            | N340   | 0,34          | 5.2    | 365   | 1198     | 0,38         | 5.9    | 397   | 1301     |
|        |       |           |            |            | 3N37   | 0,39          | 6.0    | 370   | 1214     | 0,44         | 6.7    | 398   | 1305     |
|        |       |           |            |            | N350   | 0,38          | 5.9    | 373   | 1225     | 0,42         | 6.4    | 396   | 1299     |
| 7,5    | 115   | FMJ-RN    | Lapua      | 29,0 1.142 | N320   | 0,25          | 3.9    | 304   | 997      | 0,29         | 4.5    | 341   | 1119     |
|        |       |           |            |            | N330   | 0,29          | 4.5    | 328   | 1076     | 0,35         | 5.4    | 374   | 1227     |
|        |       |           |            |            | N340   | 0,31          | 4.8    | 344   | 1129     | 0,35         | 5.4    | 372   | 1220     |
|        |       |           |            |            | N350   | 0,35          | 5.4    | 344   | 1129     | 0,42         | 6.5    | 394   | 1293     |
|        |       |           |            |            | 3N37   | 0,36          | 5.6    | 344   | 1129     | 0,42         | 6.5    | 393   | 1289     |
| 7,5    | 115   | RN        | Rainier    | 29,0 1.142 | N320   | 0,25          | 3.9    | 326   | 1068     | 0,28         | 4.4    | 347   | 1139     |
|        |       |           |            |            | N330   | 0,30          | 4.7    | 342   | 1123     | 0,33         | 5.1    | 361   | 1185     |
|        |       |           |            |            | N340   | 0,32          | 5.0    | 353   | 1157     | 0,35         | 5.4    | 374   | 1228     |
|        |       |           |            |            | N350   | 0,37          | 5.7    | 364   | 1195     | 0,41         | 6.4    | 391   | 1282     |
|        |       |           |            |            | 3N37   | 0,39          | 6.1    | 364   | 1195     | 0,42         | 6.5    | 383   | 1256     |
| 7,8    | 120   | CEPP      | Lapua      | 28,7 1.130 | N320   | 0,24          | 3.7    | 298   | 978      | 0,28         | 4.3    | 330   | 1083     |
|        |       |           |            |            | N330   | 0,29          | 4.5    | 326   | 1070     | 0,33         | 5.1    | 360   | 1181     |
|        |       |           |            |            | N340   | 0,29          | 4.5    | 326   | 1070     | 0,34         | 5.2    | 369   | 1211     |
|        |       |           |            |            | N350   | 0,34          | 5.2    | 340   | 1115     | 0,38         | 5.9    | 381   | 1250     |
|        |       |           |            |            | 3N37   | 0,37          | 5.7    | 346   | 1135     | 0,42         | 6.5    | 390   | 1280     |
| 8,0    | 124   | LSWC      | Inter cast | 29,0 1.142 | N320   | 0,24          | 3.8    | 327   | 1073     | 0,27         | 4.1    | 343   | 1125     |
|        |       |           |            |            | N330   | 0,28          | 4.4    | 345   | 1131     | 0,31         | 4.8    | 358   | 1175     |
|        |       |           |            |            | N340   | 0,30          | 4.7    | 346   | 1136     | 0,33         | 5.1    | 369   | 1211     |
|        |       |           |            |            | 3N37   | 0,35          | 5.4    | 352   | 1156     | 0,38         | 5.9    | 371   | 1218     |
|        |       |           |            |            | N350   | 0,32          | 5.0    | 346   | 1134     | 0,35         | 5.4    | 363   | 1191     |
| 8,0    | 124   | FMJ/FP    | Hornady    | 29,0 1.142 | N320   | 0,25          | 3.9    | 310   | 1017     | 0,28         | 4.3    | 334   | 1096     |
|        |       |           |            |            | N330   | 0,31          | 4.8    | 338   | 1108     | 0,34         | 5.2    | 359   | 1178     |
|        |       |           |            |            | N340   | 0,34          | 5.3    | 347   | 1139     | 0,37         | 5.7    | 370   | 1214     |
|        |       |           |            |            | 3N37   | 0,39          | 6.1    | 357   | 1172     | 0,42         | 6.5    | 377   | 1236     |
|        |       |           |            |            | N350   | 0,35          | 5.4    | 349   | 1144     | 0,39         | 6.0    | 370   | 1214     |
| 8,0    | 124   | RN        | Rainier    | 29,0 1.142 | N320   | 0,24          | 3.8    | 305   | 1000     | 0,27         | 4.1    | 326   | 1069     |
|        |       |           |            |            | N330   | 0,27          | 4.2    | 324   | 1063     | 0,30         | 4.7    | 344   | 1129     |
|        |       |           |            |            | N340   | 0,30          | 4.7    | 328   | 1077     | 0,33         | 5.1    | 351   | 1152     |
|        |       |           |            |            | N350   | 0,34          | 5.2    | 340   | 1115     | 0,38         | 5.9    | 364   | 1196     |
|        |       |           |            |            | 3N37   | 0,35          | 5.4    | 346   | 1136     | 0,39         | 6.0    | 365   | 1199     |
| 8,0    | 124   | FMJ-RN    | Lapua      | 29,0 1.142 | N320   | 0,22          | 3.4    | 290   | 951      | 0,26         | 4.0    | 326   | 1070     |
|        |       |           |            |            | N330   | 0,28          | 4.3    | 315   | 1033     | 0,32         | 4.9    | 359   | 1178     |
|        |       |           |            |            | N340   | 0,29          | 4.5    | 331   | 1086     | 0,33         | 5.1    | 360   | 1181     |
|        |       |           |            |            | N350   | 0,32          | 4.9    | 341   | 1119     | 0,37         | 5.7    | 377   | 1237     |
|        |       |           |            |            | 3N37   | 0,34          | 5.2    | 336   | 1102     | 0,40         | 6.2    | 379   | 1243     |
| 8,0    | 124   | Megashock | Lapua      | 28,7 1.130 | N320   | 0,23          | 3.5    | 273   | 896      | 0,27         | 4.2    | 321   | 1053     |
|        |       |           |            |            | N330   | 0,27          | 4.2    | 299   | 981      | 0,32         | 4.9    | 344   | 1129     |
|        |       |           |            |            | N340   | 0,28          | 4.3    | 299   | 981      | 0,32         | 4.9    | 344   | 1129     |
|        |       |           |            |            | N350   | 0,33          | 5.1    | 321   | 1053     | 0,37         | 5.7    | 362   | 1188     |
|        |       |           |            |            | 3N37   | 0,34          | 5.2    | 334   | 1096     | 0,39         | 6.0    | 375   | 1230     |
| 8,4    | 130   | FMJ       | Sierra     | 29,0 1.142 | N320   | 0,23          | 3.6    | 299   | 981      | 0,26         | 4.0    | 319   | 1046     |
|        |       |           |            |            | N330   | 0,26          | 4.0    | 314   | 1031     | 0,29         | 4.5    | 333   | 1094     |
|        |       |           |            |            | N340   | 0,28          | 4.4    | 325   | 1066     | 0,31         | 4.8    | 341   | 1119     |
|        |       |           |            |            | N350   | 0,33          | 5.2    | 330   | 1083     | 0,36         | 5.5    | 346   | 1135     |
|        |       |           |            |            | 3N37   | 0,32          | 4.9    | 325   | 1067     | 0,36         | 5.5    | 344   | 1130     |
| N105   | 0,45  | 7.0       | 351        | 1151       | 0,48   | 7.4           | 375    | 1232  |          |              |        |       |          |

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

# 9 mm Luger

Test barrel: 100 mm (4"), 1 in 10" twist  
 Primers: Small Pistol  
 Cases: LAPUA, trim-to length 19,00 mm (0.748")

| Bullet |       |        |            |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|--------|------------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type   | Mfg        | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |        |            | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 9,4    | 145   | LRN    | Inter cast | 29,0 1.142 | N330   | 0,22          | 3.5    | 285   | 935      | 0,25         | 3.8    | 305   | 1000     |
|        |       |        |            |            | N340   | 0,25          | 3.9    | 299   | 982      | 0,28         | 4.3    | 318   | 1044     |
|        |       |        |            |            | N350   | 0,27          | 4.2    | 296   | 972      | 0,30         | 4.7    | 319   | 1047     |
|        |       |        |            |            | 3N37   | 0,29          | 4.5    | 299   | 982      | 0,32         | 5.0    | 322   | 1055     |
|        |       |        |            |            | N320   | 0,20          | 3.1    | 239   | 784      | 0,25         | 3.9    | 298   | 978      |
| 9,5    | 147   | HP/XTP | Hornady    | 29,0 1.142 | N330   | 0,25          | 3.9    | 294   | 964      | 0,28         | 4.3    | 315   | 1032     |
|        |       |        |            |            | N340   | 0,25          | 3.9    | 289   | 948      | 0,28         | 4.3    | 309   | 1015     |
|        |       |        |            |            | 3N37   | 0,30          | 4.7    | 298   | 979      | 0,33         | 5.1    | 321   | 1052     |
|        |       |        |            |            | N350   | 0,29          | 4.5    | 302   | 991      | 0,32         | 5.0    | 326   | 1070     |
|        |       |        |            |            | 3N38   | 0,41          | 6.3    | 357   | 1171     | 0,45         | 6.9    | 368   | 1207     |
| 9,5    | 147   | RN     | Rainier    | 29,0 1.142 | N105   | 0,40          | 6.1    | 317   | 1039     | 0,41         | 6.4    | 338   | 1108     |
|        |       |        |            |            | N330   | 0,22          | 3.5    | 272   | 893      | 0,25         | 3.8    | 287   | 942      |
|        |       |        |            |            | N340   | 0,24          | 3.8    | 272   | 892      | 0,27         | 4.1    | 293   | 960      |
|        |       |        |            |            | N350   | 0,27          | 4.2    | 285   | 935      | 0,30         | 4.7    | 309   | 1014     |
|        |       |        |            |            | 3N37   | 0,29          | 4.5    | 286   | 937      | 0,32         | 4.9    | 307   | 1008     |
| 9,7    | 150   | CEPP   | Lapua      | 28,7 1.130 | N330   | 0,23          | 3.5    | 264   | 867      | 0,24         | 3.8    | 283   | 929      |
|        |       |        |            |            | N340   | 0,24          | 3.8    | 275   | 903      | 0,27         | 4.1    | 294   | 966      |
|        |       |        |            |            | N350   | 0,27          | 4.2    | 285   | 936      | 0,30         | 4.6    | 304   | 997      |
|        |       |        |            |            | 3N37   | 0,27          | 4.2    | 275   | 904      | 0,30         | 4.7    | 298   | 976      |

# 9 x 21

Test barrel: 140 mm (5½"), 1 in 10" twist  
 Primers: Small Pistol  
 Cases: Tanfoglio, trim-to length 21,00 mm (0.826")

| Bullet |       |        |         |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|--------|---------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type   | Mfg     | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |        |         | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 6,5    | 100   | HP     | Speer   | 29,0 1.142 | N340   | 0,39          | 5.9    | 416   | 1363     | 0,43         | 6.6    | 444   | 1455     |
|        |       |        |         |            | 3N37   | 0,43          | 6.7    | 427   | 1400     | 0,48         | 7.4    | 453   | 1485     |
|        |       |        |         |            | N350   | 0,46          | 7.0    | 433   | 1420     | 0,50         | 7.6    | 459   | 1505     |
| 7,5    | 115   | FMJ    | Sierra  | 29,5 1.161 | N340   | 0,35          | 5.3    | 381   | 1248     | 0,38         | 5.9    | 401   | 1314     |
|        |       |        |         |            | 3N37   | 0,39          | 5.9    | 375   | 1229     | 0,43         | 6.6    | 402   | 1319     |
|        |       |        |         |            | N350   | 0,39          | 5.9    | 388   | 1274     | 0,43         | 6.6    | 410   | 1346     |
| 7,5    | 115   | FMJHP  | Fiocchi | 29,5 1.161 | N105   | 0,53          | 8.1    | 410   | 1344     | 0,57         | 8.7    | 438   | 1435     |
|        |       |        |         |            | N340   | 0,35          | 5.3    | 313   | 1027     | 0,40         | 6.2    | 409   | 1342     |
|        |       |        |         |            | 3N37   | 0,40          | 6.2    | 324   | 1063     | 0,46         | 7.1    | 372   | 1220     |
| 8,0    | 123   | FMJ    | Lapua   | 29,5 1.161 | 3N38   | 0,49          | 7.6    | 383   | 1257     | 0,61         | 9.4    | 452   | 1483     |
|        |       |        |         |            | N340   | 0,31          | 4.7    | 348   | 1142     | 0,34         | 5.2    | 364   | 1194     |
|        |       |        |         |            | 3N37   | 0,35          | 5.3    | 354   | 1160     | 0,39         | 5.9    | 372   | 1222     |
| 8,0    | 123   | FMJTC  | Fiocchi | 29,5 1.161 | N350   | 0,35          | 5.3    | 348   | 1143     | 0,38         | 5.9    | 370   | 1213     |
|        |       |        |         |            | N105   | 0,45          | 6.9    | 372   | 1220     | 0,48         | 7.4    | 397   | 1301     |
|        |       |        |         |            | N340   | 0,32          | 4.9    | 330   | 1083     | 0,37         | 5.7    | 398   | 1306     |
| 9,5    | 147   | HP-XTP | Hornady | 29,5 1.161 | 3N37   | 0,38          | 5.9    | 345   | 1132     | 0,43         | 6.6    | 384   | 1260     |
|        |       |        |         |            | 3N38   | 0,46          | 7.1    | 353   | 1158     | 0,53         | 8.2    | 406   | 1332     |
|        |       |        |         |            | 3N37   | 0,32          | 4.9    | 310   | 1016     | 0,34         | 5.3    | 329   | 1079     |
| N350   | 0,30  | 4.6    | 324     | 1064       | 0,32   | 5.0           | 338    | 1110  |          |              |        |       |          |
| N105   | 0,38  | 5.8    | 326     | 1071       | 0,41   | 6.3           | 347    | 1139  |          |              |        |       |          |

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

# 9 x 23 Winchester

Test barrel: 130 mm (5"), 1 in 16" twist  
 Primers: Small Pistol  
 Cases: Winchester, trim-to length 22,75 mm (0.896")

| Bullet |       |           |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,5    | 115   | FMJ       | Sierra  | 32,5   | 1.280  | N340          | 0,41   | 6.3   | 425      | 1395         | 0,46   | 7.2   | 449      | 1474  |
|        |       |           |         |        |        | 3N37          | 0,47   | 7.3   | 424      | 1392         | 0,54   | 8.3   | 462      | 1517  |
|        |       |           |         |        |        | N350          | 0,48   | 7.4   | 419      | 1374         | 0,57   | 8.8   | 456      | 1496  |
| 8,0    | 123   | FMJ       | Lapua   | 32,5   | 1.280  | N340          | 0,38   | 5.9   | 384      | 1261         | 0,45   | 6.9   | 422      | 1385  |
|        |       |           |         |        |        | 3N37          | 0,43   | 6.6   | 397      | 1302         | 0,48   | 7.5   | 427      | 1400  |
|        |       |           |         |        |        | N350          | 0,45   | 6.9   | 388      | 1272         | 0,50   | 7.8   | 425      | 1394  |
| 8,0    | 123   | Megashock | Lapua   | 30,2   | 1.189  | N340          | 0,37   | 5.7   | 382      | 1254         | 0,42   | 6.5   | 419      | 1373  |
|        |       |           |         |        |        | N350          | 0,44   | 6.8   | 391      | 1282         | 0,48   | 7.3   | 423      | 1386  |
|        |       |           |         |        |        | 3N37          | 0,41   | 6.4   | 391      | 1281         | 0,50   | 7.7   | 432      | 1416  |
| 8,5    | 130   | RN B      | Rainier | 32,5   | 1.280  | N340          | 0,37   | 5.7   | 366      | 1202         | 0,41   | 6.3   | 401      | 1315  |
|        |       |           |         |        |        | 3N37          | 0,43   | 6.6   | 377      | 1238         | 0,48   | 7.5   | 412      | 1351  |
|        |       |           |         |        |        | N350          | 0,40   | 6.1   | 361      | 1184         | 0,47   | 7.3   | 405      | 1328  |

NOTE: This cartridge is not supported by CIP or SAAMI. The maximum loads do not exceed 300 MPa.

# .357 SIG

Test barrel: 130 mm (5"), 1 in 16" twist  
 Primers: Small Pistol  
 Cases: Starline, trim-to length 21,80 mm (0.858")

| Bullet |       |           |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 6,2    | 95    | FMJ       | Sierra  | 28,9   | 1.140  | N340          | 0,51   | 7.8   | 461      | 1512         | 0,58   | 8.9   | 504      | 1652  |
|        |       |           |         |        |        | 3N37          | 0,56   | 8.7   | 469      | 1539         | 0,65   | 10.0  | 514      | 1686  |
|        |       |           |         |        |        | N350          | 0,57   | 8.8   | 469      | 1537         | 0,66   | 10.1  | 518      | 1699  |
| 7,5    | 115   | FMJ       | Sierra  | 28,9   | 1.140  | N340          | 0,41   | 6.3   | 404      | 1325         | 0,50   | 7.7   | 449      | 1473  |
|        |       |           |         |        |        | 3N37          | 0,49   | 7.5   | 416      | 1365         | 0,56   | 8.6   | 458      | 1502  |
|        |       |           |         |        |        | N350          | 0,47   | 7.3   | 411      | 1347         | 0,56   | 8.6   | 460      | 1509  |
| 8,0    | 123   | FMJ-RN    | Lapua   | 28,9   | 1.140  | N340          | 0,39   | 6.0   | 381      | 1250         | 0,48   | 7.4   | 426      | 1398  |
|        |       |           |         |        |        | 3N37          | 0,47   | 7.2   | 392      | 1287         | 0,54   | 8.3   | 436      | 1431  |
|        |       |           |         |        |        | N350          | 0,47   | 7.2   | 394      | 1293         | 0,54   | 8.3   | 439      | 1440  |
| 8,0    | 123   | Megashock | Lapua   | 28,9   | 1.140  | N340          | 0,39   | 6.0   | 381      | 1249         | 0,48   | 7.4   | 427      | 1400  |
|        |       |           |         |        |        | 3N37          | 0,45   | 7.0   | 393      | 1291         | 0,54   | 8.3   | 437      | 1435  |
|        |       |           |         |        |        | N350          | 0,45   | 6.9   | 389      | 1276         | 0,54   | 8.4   | 440      | 1445  |
| 8,5    | 130   | RN B      | Rainier | 28,9   | 1.140  | N340          | 0,40   | 6.1   | 370      | 1213         | 0,46   | 7.1   | 409      | 1343  |
|        |       |           |         |        |        | 3N37          | 0,46   | 7.1   | 381      | 1249         | 0,52   | 8.1   | 405      | 1330  |
|        |       |           |         |        |        | N350          | 0,44   | 6.8   | 383      | 1257         | 0,53   | 8.1   | 428      | 1404  |

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

# .38 Super Auto

Test barrel: 140 mm (5½"), 1 in 16" twist  
 Primers: Small Pistol  
 Cases: Remington +P, trim-to length 22,70 mm (0.893")

| Bullet |       |        |           |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-----------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg       | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |           | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,5    | 115   | HP-XTP | Hornady   | 31,5   | 1.240  | N320          | 0,33   | 5.1   | 362      | 1188         | 0,36   | 5.5   | 382      | 1253  |
|        |       |        |           |        |        | N340          | 0,39   | 6.0   | 381      | 1250         | 0,42   | 6.5   | 404      | 1324  |
|        |       |        |           |        |        | 3N37          | 0,42   | 6.5   | 385      | 1263         | 0,47   | 7.2   | 411      | 1347  |
| 7,5    | 115   | FMJ    | Lapua     | 31,5   | 1.240  | N330          | 0,34   | 5.2   | 350      | 1148         | 0,39   | 6.1   | 394      | 1294  |
|        |       |        |           |        |        | N350          | 0,51   | 7.9   | 414      | 1358         | 0,55   | 8.5   | 439      | 1439  |
|        |       |        |           |        |        | 3N37          | 0,48   | 7.4   | 395      | 1296         | 0,51   | 7.9   | 419      | 1375  |
| 7,5    | 115   | RN     | Rainier   | 31,5   | 1.240  | N320          | 0,31   | 4.8   | 357      | 1171         | 0,34   | 5.2   | 376      | 1232  |
|        |       |        |           |        |        | N340          | 0,39   | 6.0   | 382      | 1253         | 0,42   | 6.5   | 404      | 1325  |
|        |       |        |           |        |        | N350          | 0,43   | 6.6   | 388      | 1273         | 0,48   | 7.3   | 413      | 1355  |
| 8,0    | 123   | FMJ    | Lapua     | 31,5   | 1.240  | 3N37          | 0,44   | 6.8   | 390      | 1280         | 0,48   | 7.3   | 411      | 1348  |
|        |       |        |           |        |        | N330          | 0,32   | 4.9   | 362      | 1188         | 0,37   | 5.8   | 382      | 1254  |
|        |       |        |           |        |        | N320          | 0,30   | 4.6   | 330      | 1083         | 0,33   | 5.0   | 348      | 1142  |
| 8,0    | 124   | FMJ-FP | Hornady   | 32,0   | 1.260  | N330          | 0,36   | 5.6   | 363      | 1191         | 0,42   | 6.4   | 409      | 1340  |
|        |       |        |           |        |        | N340          | 0,39   | 6.0   | 368      | 1207         | 0,43   | 6.6   | 391      | 1281  |
|        |       |        |           |        |        | 3N37          | 0,46   | 7.1   | 374      | 1227         | 0,48   | 7.4   | 388      | 1271  |
| 8,0    | 124   | LSWC   | Intercast | 32,0   | 1.260  | N350          | 0,41   | 6.3   | 366      | 1201         | 0,45   | 6.9   | 389      | 1275  |
|        |       |        |           |        |        | N105          | 0,64   | 9.9   | 429      | 1407         | 0,67   | 10.4  | 458      | 1501  |
|        |       |        |           |        |        | N320          | 0,26   | 4.0   | 334      | 1096         | 0,29   | 4.5   | 352      | 1153  |
| 8,0    | 124   | FMJ    | Sierra    | 32,0   | 1.260  | N340          | 0,35   | 5.4   | 367      | 1204         | 0,38   | 5.9   | 386      | 1266  |
|        |       |        |           |        |        | N350          | 0,39   | 6.0   | 371      | 1217         | 0,43   | 6.6   | 393      | 1289  |
|        |       |        |           |        |        | 3N37          | 0,41   | 6.3   | 377      | 1237         | 0,45   | 6.9   | 397      | 1302  |
| 8,4    | 130   | FMJ    | Sierra    | 32,0   | 1.260  | N320          | 0,27   | 4.2   | 317      | 1040         | 0,30   | 4.6   | 336      | 1101  |
|        |       |        |           |        |        | N330          | 0,32   | 4.9   | 323      | 1060         | 0,37   | 5.6   | 359      | 1178  |
|        |       |        |           |        |        | N340          | 0,36   | 5.6   | 349      | 1145         | 0,39   | 5.9   | 367      | 1202  |
| 8,4    | 130   | RN     | Rainier   | 32,0   | 1.260  | 3N37          | 0,41   | 6.3   | 360      | 1181         | 0,44   | 6.8   | 380      | 1245  |
|        |       |        |           |        |        | N105          | 0,60   | 9.3   | 402      | 1319         | 0,63   | 9.6   | 423      | 1388  |
|        |       |        |           |        |        | N320          | 0,29   | 4.5   | 312      | 1024         | 0,31   | 4.8   | 331      | 1086  |
| 8,4    | 130   | RN     | Rainier   | 32,0   | 1.260  | N340          | 0,35   | 5.4   | 344      | 1129         | 0,38   | 5.8   | 360      | 1179  |
|        |       |        |           |        |        | N350          | 0,38   | 5.9   | 347      | 1138         | 0,42   | 6.4   | 368      | 1206  |
|        |       |        |           |        |        | 3N37          | 0,41   | 6.3   | 355      | 1165         | 0,44   | 6.8   | 374      | 1225  |
| 9,4    | 145   | LRN    | Intercast | 32,0   | 1.260  | N340          | 0,28   | 4.3   | 315      | 1033         | 0,31   | 4.7   | 333      | 1091  |
|        |       |        |           |        |        | 3N37          | 0,36   | 5.6   | 329      | 1079         | 0,39   | 5.9   | 349      | 1143  |
|        |       |        |           |        |        | N350          | 0,33   | 5.1   | 319      | 1047         | 0,36   | 5.6   | 339      | 1111  |
| 9,5    | 147   | HP/XTP | Hornady   | 32,0   | 1.260  | N340          | 0,33   | 5.1   | 315      | 1033         | 0,36   | 5.5   | 335      | 1097  |
|        |       |        |           |        |        | 3N37          | 0,38   | 5.9   | 334      | 1096         | 0,41   | 6.3   | 353      | 1158  |
|        |       |        |           |        |        | N350          | 0,37   | 5.7   | 327      | 1073         | 0,40   | 6.1   | 346      | 1134  |
| 9,5    | 147   | RN     | Rainier   | 32,0   | 1.260  | N105          | 0,51   | 7.9   | 360      | 1181         | 0,53   | 8.2   | 377      | 1237  |
|        |       |        |           |        |        | N340          | 0,32   | 4.9   | 321      | 1053         | 0,35   | 5.3   | 335      | 1097  |
|        |       |        |           |        |        | N350          | 0,34   | 5.2   | 307      | 1007         | 0,37   | 5.7   | 326      | 1070  |
| 9,5    | 147   | RN     | Rainier   | 32,0   | 1.260  | 3N37          | 0,36   | 5.6   | 316      | 1037         | 0,39   | 5.9   | 333      | 1091  |

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

# .38 Super Lapua

Test barrel: 140 mm (5½"), 1 in 16" twist  
 Primers: Small Pistol  
 Cases: LAPUA, trim-to length 22,70 mm (0.893")

| Bullet |       |      |        |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|--------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg    | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |        | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,5    | 115   | FMJ  | Lapua  | 31,5   | 1.240  | N330          | 0,34   | 5.2   | 350      | 1148         | 0,41   | 6.3   | 407      | 1335  |
|        |       |      |        |        |        | N340          | 0,40   | 6.2   | 373      | 1224         | 0,44   | 6.8   | 406      | 1330  |
|        |       |      |        |        |        | 3N37          | 0,47   | 7.3   | 379      | 1243         | 0,52   | 8.0   | 415      | 1361  |
|        |       |      |        |        |        | 3N38          | 0,60   | 9.3   | 413      | 1355         | 0,68   | 10.4  | 454      | 1489  |
| 8,0    | 123   | FMJ  | Lapua  | 32,0   | 1.260  | N330          | 0,32   | 4.9   | 362      | 1188         | 0,39   | 6.0   | 388      | 1273  |
|        |       |      |        |        |        | N340          | 0,39   | 6.0   | 357      | 1171         | 0,43   | 6.7   | 387      | 1270  |
|        |       |      |        |        |        | 3N37          | 0,47   | 7.3   | 372      | 1220         | 0,52   | 8.0   | 402      | 1319  |
|        |       |      |        |        |        | 3N38          | 0,57   | 8.8   | 394      | 1293         | 0,62   | 9.6   | 434      | 1424  |
| 8,4    | 130   | FMJ  | Sierra | 32,0   | 1.260  | N330          | 0,32   | 4.9   | 232      | 761          | 0,38   | 5.9   | 368      | 1207  |
|        |       |      |        |        |        | N340          | 0,38   | 5.9   | 347      | 1138         | 0,41   | 6.4   | 376      | 1234  |
|        |       |      |        |        |        | 3N37          | 0,46   | 7.1   | 360      | 1181         | 0,50   | 7.7   | 392      | 1285  |
|        |       |      |        |        |        | 3N38          | 0,53   | 8.2   | 373      | 1224         | 0,58   | 8.9   | 411      | 1350  |

# .38 Special

Test barrel: 170 mm (6½"), 1 in 18" twist  
 Primers: Small Pistol  
 Cases: LAPUA, trim-to length 29,10 mm (1.146")

| Bullet |       |        |           |        | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-----------|--------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg       | C.O.L. |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |           | [mm]   | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,1    | 110   | HP/XTP | Hornady   | 36,5   | 1.437  | N320               | 0,35   | 5.4   | 342      | 1120         | 0,40   | 6.1   | 388      | 1272  |
|        |       |        |           |        |        | N340               | 0,40   | 6.2   | 345      | 1130         | 0,45   | 6.9   | 386      | 1267  |
|        |       |        |           |        |        | 3N37               | 0,48   | 7.3   | 353      | 1156         | 0,53   | 8.2   | 399      | 1308  |
|        |       |        |           |        |        | N350               | 0,43   | 6.6   | 355      | 1165         | 0,50   | 7.7   | 398      | 1305  |
| 8,0    | 124   | LSWC   | Intercast | 36,5   | 1.437  | N320               | 0,29   | 4.5   | 310      | 1015         | 0,34   | 5.2   | 353      | 1159  |
|        |       |        |           |        |        | N340               | 0,37   | 5.7   | 324      | 1063         | 0,42   | 6.4   | 367      | 1203  |
|        |       |        |           |        |        | 3N37               | 0,41   | 6.3   | 329      | 1079         | 0,46   | 7.0   | 367      | 1205  |
|        |       |        |           |        |        | N350               | 0,39   | 5.9   | 336      | 1101         | 0,44   | 6.8   | 370      | 1215  |
| 8,1    | 125   | FP/XTP | Hornady   | 36,5   | 1.437  | N320               | 0,32   | 4.9   | 299      | 981          | 0,37   | 5.6   | 342      | 1121  |
|        |       |        |           |        |        | N340               | 0,38   | 5.8   | 318      | 1042         | 0,43   | 6.7   | 359      | 1178  |
|        |       |        |           |        |        | 3N37               | 0,44   | 6.8   | 319      | 1045         | 0,49   | 7.5   | 367      | 1204  |
|        |       |        |           |        |        | N350               | 0,42   | 6.5   | 323      | 1058         | 0,49   | 7.5   | 373      | 1224  |
| 8,1    | 125   | FP     | Rainier   | 36,5   | 1.437  | N320               | 0,29   | 4.5   | 293      | 960          | 0,34   | 5.2   | 332      | 1089  |
|        |       |        |           |        |        | N340               | 0,34   | 5.2   | 306      | 1002         | 0,41   | 6.3   | 349      | 1146  |
|        |       |        |           |        |        | N350               | 0,38   | 5.9   | 304      | 997          | 0,45   | 6.9   | 354      | 1160  |
|        |       |        |           |        |        | 3N37               | 0,40   | 6.2   | 310      | 1017         | 0,47   | 7.2   | 362      | 1187  |
| 9,1    | 140   | HP     | Speer     | 36,5   | 1.437  | N320               | 0,30   | 4.6   | 268      | 878          | 0,35   | 5.3   | 320      | 1051  |
|        |       |        |           |        |        | N340               | 0,36   | 5.6   | 275      | 902          | 0,41   | 6.2   | 329      | 1079  |
|        |       |        |           |        |        | 3N37               | 0,41   | 6.2   | 282      | 925          | 0,46   | 7.1   | 341      | 1117  |
|        |       |        |           |        |        | N350               | 0,40   | 6.2   | 282      | 925          | 0,45   | 6.9   | 336      | 1102  |
| 9,4    | 145   | LSWC   | Intercast | 37,5   | 1.476  | N320               | 0,25   | 3.9   | 270      | 886          | 0,30   | 4.6   | 306      | 1004  |
|        |       |        |           |        |        | N340               | 0,33   | 5.1   | 295      | 966          | 0,38   | 5.8   | 341      | 1118  |
|        |       |        |           |        |        | 3N37               | 0,36   | 5.5   | 287      | 940          | 0,39   | 6.0   | 328      | 1077  |
|        |       |        |           |        |        | N350               | 0,35   | 5.4   | 296      | 969          | 0,42   | 6.4   | 346      | 1136  |
| 9,4    | 145   | LSWC   |           | 37,5   | 1.476  | N32C <sup>1)</sup> | 0,32   | 4.9   | 307      | 1007         | 0,37   | 5.7   | 314      | 1030  |
|        |       |        |           |        |        | N340               | 0,30   | 4.6   | 261      | 856          | 0,35   | 5.4   | 306      | 1004  |
| 9,5    | 146   | JHP    | Speer     | 35,0   | 1.378  | 3N37               | 0,35   | 5.4   | 263      | 863          | 0,40   | 6.1   | 310      | 1018  |
|        |       |        |           |        |        | N350               | 0,34   | 5.2   | 265      | 869          | 0,39   | 5.9   | 308      | 1010  |
|        |       |        |           |        |        | N320               | 0,20   | 3.0   | 237      | 776          | 0,23   | 3.5   | 267      | 876   |
| 9,6    | 148   | LWC    | Sako      | 30,0   | 1.181  | N330               | 0,22   | 3.3   | 239      | 784          | 0,25   | 3.8   | 277      | 910   |
|        |       |        |           |        |        | N340               | 0,24   | 3.6   | 248      | 812          | 0,27   | 4.1   | 282      | 926   |
|        |       |        |           |        |        | N350               | 0,27   | 4.1   | 255      | 835          | 0,30   | 4.6   | 294      | 964   |

<sup>1)</sup> Cowboy Action Shooting load

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

# .38 Special

Test barrel: 170 mm (6½"), 1 in 18" twist  
 Primers: Small Pistol  
 Cases: LAPUA, trim-to length 29,10 mm (1.146")

| Bullet |       |         |           |        | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|-----------|--------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg       | C.O.L. |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |           | [mm]   | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,2   | 158   | HP      | Speer     | 36,5   | 1.437  | N320               | 0,25   | 3.9   | 218      | 715          | 0,30   | 4.6   | 272      | 892   |
|        |       |         |           |        |        | N340               | 0,32   | 4.9   | 241      | 791          | 0,37   | 5.6   | 300      | 983   |
|        |       |         |           |        |        | 3N37               | 0,38   | 5.9   | 259      | 848          | 0,43   | 6.6   | 305      | 999   |
|        |       |         |           |        |        | N350               | 0,36   | 5.5   | 261      | 855          | 0,41   | 6.3   | 309      | 1013  |
| 10,2   | 158   | FNCM    | Gunhill   | 36,7   | 1.445  | N32C <sup>1)</sup> | 0,27   | 4.2   | 261      | 856          | 0,36   | 5.6   | 306      | 1004  |
|        |       |         |           |        |        | N320 <sup>1)</sup> | 0,21   | 3.3   | 230      | 755          | 0,25   | 3.8   | 256      | 840   |
| 10,3   | 158   | LSWC/HP |           | 36,5   | 1.437  | N330 <sup>1)</sup> | 0,23   | 3.6   | 240      | 787          | 0,27   | 4.1   | 269      | 883   |
|        |       |         |           |        |        | N320               | 0,26   | 3.9   | 237      | 776          | 0,31   | 4.8   | 283      | 927   |
| 10,2   | 158   | FP      | Rainier   | 37,5   | 1.476  | N340               | 0,32   | 4.9   | 247      | 809          | 0,37   | 5.7   | 295      | 967   |
|        |       |         |           |        |        | N350               | 0,36   | 5.5   | 261      | 856          | 0,41   | 6.3   | 306      | 1004  |
|        |       |         |           |        |        | 3N37               | 0,37   | 5.6   | 260      | 853          | 0,42   | 6.5   | 310      | 1015  |
|        |       |         |           |        |        | N340               | 0,33   | 5.1   | 297      | 974          | 0,38   | 5.8   | 338      | 1107  |
| 10,4   | 160   | LFN     | Intercast | 37,5   | 1.476  | 3N37               | 0,35   | 5.3   | 277      | 909          | 0,40   | 6.2   | 324      | 1064  |
|        |       |         |           |        |        | N350               | 0,35   | 5.4   | 294      | 963          | 0,40   | 6.1   | 328      | 1077  |

<sup>1)</sup> Cowboy Action Shooting load

# .357 Magnum

Test barrel: 175 mm (7"), 1 in 18½" twist  
 Primers: Small Pistol  
 Cases: Remington, trim-to length 32,60 mm (1.283")

| Bullet |       |        |           |                    | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|-----------|--------------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg       | C.O.L.             |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |           | [mm]               | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 7,1    | 110   | HP/XTP | Hornady   | 40,0               | 1.575  | N310          | 0,43   | 6.6   | 413      | 1355         | 0,45   | 7.0   | 427      | 1402  |
|        |       |        |           |                    |        | N320          | 0,51   | 7.9   | 445      | 1460         | 0,54   | 8.3   | 462      | 1516  |
|        |       |        |           |                    |        | N340          | 0,60   | 9.3   | 475      | 1558         | 0,64   | 9.8   | 500      | 1639  |
|        |       |        |           |                    |        | 3N37          | 0,68   | 10.5  | 496      | 1627         | 0,73   | 11.3  | 518      | 1701  |
|        |       |        |           |                    |        | N350          | 0,69   | 10.6  | 497      | 1631         | 0,73   | 11.2  | 517      | 1697  |
|        |       |        |           |                    |        | N110          | 1,20   | 18.5  | 523      | 1716         | 1,35F  | 20.8F | 612      | 2006  |
| 8,0    | 124   | LSWC   | Intercast | 41,0 <sup>1)</sup> | 1.614  | N340          | 0,56   | 8.6   | 443      | 1453         | 0,60   | 9.2   | 462      | 1516  |
|        |       |        |           |                    |        | N350          | 0,59   | 9.1   | 446      | 1463         | 0,63   | 9.8   | 465      | 1524  |
|        |       |        |           |                    |        | N110          | 1,11   | 17.1  | 510      | 1673         | 1,18   | 18.3  | 541      | 1775  |
|        |       |        |           |                    |        | N310          | 0,39   | 6.0   | 371      | 1217         | 0,42   | 6.4   | 391      | 1284  |
| 8,1    | 125   | FP/XTP | Hornady   | 40,0               | 1.575  | N320          | 0,45   | 6.9   | 400      | 1312         | 0,49   | 7.5   | 420      | 1379  |
|        |       |        |           |                    |        | N340          | 0,56   | 8.6   | 440      | 1444         | 0,60   | 9.3   | 462      | 1517  |
|        |       |        |           |                    |        | N350          | 0,62   | 9.6   | 456      | 1496         | 0,66   | 10.2  | 476      | 1561  |
|        |       |        |           |                    |        | N110          | 1,09   | 16.8  | 488      | 1601         | 1,19F  | 18.4F | 540      | 1772  |
| 9,1    | 140   | HP     | Speer     | 40,0               | 1.575  | N340          | 0,53   | 8.2   | 404      | 1325         | 0,56   | 8.7   | 422      | 1385  |
|        |       |        |           |                    |        | 3N37          | 0,59   | 9.1   | 417      | 1368         | 0,63   | 9.8   | 439      | 1440  |
|        |       |        |           |                    |        | N350          | 0,58   | 8.9   | 416      | 1365         | 0,62   | 9.5   | 437      | 1433  |
|        |       |        |           |                    |        | N110          | 1,02   | 15.7  | 457      | 1499         | 1,11F  | 17.1F | 502      | 1647  |
| 9,4    | 145   | LSWC   | Intercast | 41,0 <sup>1)</sup> | 1.614  | N320          | 0,41   | 6.3   | 376      | 1234         | 0,44   | 6.7   | 390      | 1281  |
|        |       |        |           |                    |        | N340          | 0,47   | 7.3   | 398      | 1306         | 0,50   | 7.7   | 415      | 1360  |
|        |       |        |           |                    |        | 3N37          | 0,54   | 8.3   | 412      | 1352         | 0,58   | 9.0   | 432      | 1418  |
|        |       |        |           |                    |        | N350          | 0,51   | 7.9   | 404      | 1325         | 0,56   | 8.7   | 427      | 1401  |
| 10,2   | 158   | HP     | Speer     | 40,0               | 1.575  | N110          | 0,98   | 15.1  | 479      | 1572         | 1,04   | 16.0  | 502      | 1649  |
|        |       |        |           |                    |        | N320          | 0,40   | 6.2   | 335      | 1099         | 0,43   | 6.6   | 354      | 1160  |
|        |       |        |           |                    |        | N340          | 0,47   | 7.3   | 361      | 1184         | 0,50   | 7.7   | 378      | 1239  |
|        |       |        |           |                    |        | 3N37          | 0,53   | 8.2   | 377      | 1237         | 0,57   | 8.8   | 398      | 1305  |
|        |       |        |           |                    |        | N350          | 0,54   | 8.3   | 385      | 1263         | 0,58   | 8.9   | 400      | 1314  |

F = Case full

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.

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

## .357 Magnum

Test barrel: 175 mm (7"), 1 in 18½" twist  
 Primers: Small Pistol  
 Cases: Remington, trim-to length 32,60 mm (1.283")

| Bullet |       |         |           |                    | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|-----------|--------------------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg       | C.O.L.             |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |           | [mm]               | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,2   | 158   | FP/XTP  | Hornady   | 40,0               | 1.575  | N105               | 0,76   | 11.7  | 427      | 1401         | 0,80   | 12.4  | 447      | 1466  |
| 10,2   | 158   | HP      | Speer     | 40,0               | 1.575  | N110               | 0,98   | 15.1  | 451      | 1480         | 1,03   | 15.9  | 478      | 1569  |
| 10,2   | 158   | FNCM    | Gunhill   | 40,2               | 1.583  | N32C <sup>1)</sup> | 0,29   | 4.5   | 265      | 869          | 0,37   | 5.7   | 309      | 1014  |
| 10,3   | 158   | LSWC/HP |           | 40,0               | 1.575  | N330 <sup>1)</sup> | 0,25   | 3.9   | 241      | 791          | 0,32   | 5.0   | 304      | 997   |
|        |       |         |           |                    |        | N340 <sup>1)</sup> | 0,29   | 4.5   | 245      | 804          | 0,38   | 5.9   | 320      | 1050  |
| 10,4   | 160   | LFN     | Intercast | 40,0               | 1.575  | N340               | 0,45   | 6.9   | 376      | 1234         | 0,48   | 7.4   | 389      | 1276  |
|        |       |         |           |                    |        | 3N37               | 0,51   | 7.9   | 383      | 1257         | 0,54   | 8.4   | 403      | 1321  |
|        |       |         |           |                    |        | N350               | 0,48   | 7.4   | 383      | 1257         | 0,52   | 8.1   | 399      | 1309  |
|        |       |         |           |                    |        | N110               | 0,92   | 14.2  | 456      | 1496         | 0,97   | 15.0  | 478      | 1570  |
| 11,7   | 180   | TMJ     | Speer     | 42,6 <sup>1)</sup> | 1.677  | N340               | 0,45   | 6.9   | 321      | 1053         | 0,48   | 7.4   | 341      | 1118  |
|        |       |         |           |                    |        | 3N37               | 0,50   | 7.7   | 336      | 1102         | 0,54   | 8.3   | 358      | 1174  |
|        |       |         |           |                    |        | N350               | 0,47   | 7.3   | 325      | 1066         | 0,51   | 7.9   | 351      | 1150  |
|        |       |         |           |                    |        | N105               | 0,65   | 10.0  | 379      | 1243         | 0,71   | 10.9  | 401      | 1315  |
|        |       |         |           |                    |        | N110               | 0,82   | 12.7  | 382      | 1253         | 0,91F  | 14.0F | 425      | 1394  |
| 13,0   | 200   | TMJ     | Speer     | 43,1 <sup>1)</sup> | 1.697  | 3N37               | 0,46   | 7.1   | 297      | 974          | 0,50   | 7.7   | 317      | 1041  |
|        |       |         |           |                    |        | N350               | 0,45   | 6.9   | 288      | 945          | 0,49   | 7.7   | 314      | 1031  |
|        |       |         |           |                    |        | N105               | 0,60   | 9.3   | 337      | 1106         | 0,64   | 10.2  | 358      | 1174  |
|        |       |         |           |                    |        | N110               | 0,79   | 12.2  | 362      | 1188         | 0,83   | 12.8  | 382      | 1252  |

F = Case full

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.

<sup>2)</sup> Cowboy Action Shooting load

## .357 Remington Maximum

Test barrel: 300 mm (12"), 1 in 18½" twist  
 Primers: Small Rifle  
 Cases: Remington, trim-to length 40,60 mm (1.598")

| Bullet |       |            |           |                    | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------------|-----------|--------------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type       | Mfg       | C.O.L.             |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |            |           | [mm]               | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,2   | 158   | FP/XTP     | Hornady   | 48,0               | 1.890  | 3N37          | 0,70   | 10.8  | 461      | 1512         | 0,74   | 11.3  | 478      | 1568  |
|        |       |            |           |                    |        | N350          | 0,64   | 9.9   | 443      | 1453         | 0,71   | 10.9  | 470      | 1541  |
|        |       |            |           |                    |        | N105          | 0,85   | 13.1  | 485      | 1591         | 0,92   | 14.3  | 513      | 1683  |
|        |       |            |           |                    |        | N110          | 1,21   | 18.7  | 557      | 1827         | 1,27   | 19.5  | 578      | 1898  |
| 10,2   | 158   | FP         | Rainier   | 48,0               | 1.890  | N350          | 0,71   | 11.0  | 440      | 1444         | 0,78   | 12.0  | 472      | 1548  |
|        |       |            |           |                    |        | 3N37          | 0,69   | 10.6  | 445      | 1460         | 0,75   | 11.5  | 473      | 1552  |
|        |       |            |           |                    |        | N105          | 0,86   | 13.3  | 490      | 1608         | 0,94   | 14.5  | 517      | 1695  |
|        |       |            |           |                    |        | N110          | 1,27   | 19.6  | 559      | 1834         | 1,32   | 20.3  | 581      | 1907  |
| 10,4   | 160   | LFN        | Intercast | 48,0               | 1.890  | 3N37          | 0,66   | 10.2  | 465      | 1526         | 0,72   | 11.1  | 482      | 1580  |
|        |       |            |           |                    |        | N350          | 0,66   | 10.2  | 459      | 1506         | 0,70   | 10.7  | 473      | 1553  |
|        |       |            |           |                    |        | N105          | 0,87   | 13.4  | 517      | 1696         | 0,95   | 14.6  | 541      | 1775  |
| 11,7   | 180   | Silhouette | Nosler    | 48,1               | 1.894  | N105          | 0,79   | 12.2  | 443      | 1453         | 0,85   | 13.1  | 468      | 1534  |
|        |       |            |           |                    |        | N110          | 1,07   | 16.5  | 500      | 1640         | 1,12   | 17.3  | 519      | 1704  |
|        |       |            |           |                    |        | N120          | 1,40   | 21.6  | 516      | 1693         | 1,46   | 22.5  | 537      | 1762  |
| 13,0   | 200   | TMJ        | Speer     | 50.8 <sup>1)</sup> | 2.000  | N110          | 0,99   | 15.3  | 440      | 1444         | 1,04   | 16.1  | 460      | 1508  |
|        |       |            |           |                    |        | N120          | 1,30   | 20.1  | 458      | 1503         | 1,36   | 20.9  | 483      | 1584  |

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.

## .40 S&W

Test barrel: 140 mm (5½"), 1 in 16" twist  
 Primers: Small Pistol  
 Cases: Remington, trim-to length 21,40 mm (0.843")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 8,7    | 135   | HP-XTP | Hornady | 28,6   | 1.126  | N320          | 0,34   | 5.2   | 337      | 1106         | 0,35   | 5.5   | 346      | 1134  |
|        |       |        |         |        |        | N330          | 0,39   | 6.0   | 348      | 1142         | 0,40   | 6.2   | 357      | 1172  |
|        |       |        |         |        |        | N340          | 0,39   | 6.0   | 345      | 1132         | 0,41   | 6.3   | 357      | 1171  |
|        |       |        |         |        |        | 3N37          | 0,47   | 7.3   | 357      | 1171         | 0,49   | 7.6   | 369      | 1210  |
|        |       |        |         |        |        | N350          | 0,43   | 6.6   | 351      | 1152         | 0,45   | 7.0   | 362      | 1189  |
| 8,7    | 135   | HP     | Nosler  | 28,6   | 1.126  | N320          | 0,39   | 6.0   | 373      | 1224         | 0,40   | 6.2   | 384      | 1259  |
|        |       |        |         |        |        | N340          | 0,48   | 7.4   | 403      | 1322         | 0,50   | 7.8   | 416      | 1364  |
|        |       |        |         |        |        | 3N37          | 0,54   | 8.3   | 403      | 1322         | 0,56   | 8.6   | 417      | 1367  |
| 10,0   | 155   | FP     | Rainier | 28,6   | 1.126  | N320          | 0,34   | 5.2   | 331      | 1086         | 0,35   | 5.5   | 340      | 1114  |
|        |       |        |         |        |        | N330          | 0,39   | 6.0   | 344      | 1129         | 0,40   | 6.2   | 354      | 1160  |
|        |       |        |         |        |        | N340          | 0,41   | 6.3   | 352      | 1155         | 0,43   | 6.6   | 364      | 1195  |
|        |       |        |         |        |        | N350          | 0,46   | 7.1   | 357      | 1171         | 0,48   | 7.4   | 370      | 1213  |
|        |       |        |         |        |        | 3N37          | 0,49   | 7.6   | 359      | 1178         | 0,51   | 7.9   | 371      | 1216  |
| 10,7   | 165   | TC-FMJ | PMC     | 28,6   | 1.126  | N320          | 0,32   | 4.9   | 303      | 994          | 0,34   | 5.2   | 316      | 1038  |
|        |       |        |         |        |        | N340          | 0,41   | 6.3   | 334      | 1096         | 0,43   | 6.6   | 347      | 1137  |
|        |       |        |         |        |        | 3N37          | 0,47   | 7.3   | 343      | 1125         | 0,49   | 7.5   | 355      | 1166  |
|        |       |        |         |        |        | 3N38          | 0,62   | 9.6   | 369      | 1211         | 0,64   | 9.8   | 382      | 1252  |
| 11,0   | 170   | HP     | Hornady | 28,6   | 1.126  | N340          | 0,34   | 5.2   | 313      | 1027         | 0,36   | 5.6   | 324      | 1063  |
|        |       |        |         |        |        | 3N37          | 0,39   | 6.0   | 322      | 1056         | 0,41   | 6.3   | 333      | 1093  |
|        |       |        |         |        |        | N350          | 0,38   | 5.9   | 322      | 1056         | 0,40   | 6.2   | 333      | 1091  |
| 11,7   | 180   | HP     | Speer   | 28,6   | 1.126  | N340          | 0,35   | 5.4   | 305      | 1001         | 0,37   | 5.7   | 316      | 1037  |
|        |       |        |         |        |        | 3N37          | 0,38   | 5.9   | 303      | 994          | 0,40   | 6.2   | 315      | 1035  |
|        |       |        |         |        |        | N350          | 0,38   | 5.9   | 319      | 1047         | 0,40   | 6.2   | 329      | 1078  |
| 11,7   | 180   | LTC    | Fiocchi | 28,6   | 1.126  | N320          | 0,23   | 3.5   | 269      | 883          | 0,26   | 4.1   | 295      | 968   |
|        |       |        |         |        |        | N340          | 0,30   | 4.6   | 289      | 948          | 0,34   | 5.2   | 315      | 1034  |
|        |       |        |         |        |        | 3N37          | 0,35   | 5.4   | 289      | 948          | 0,39   | 6.1   | 320      | 1049  |
| 13,0   | 200   | TMJ    | Speer   | 28,6   | 1.126  | N340          | 0,30   | 4.6   | 267      | 876          | 0,32   | 4.9   | 277      | 910   |
|        |       |        |         |        |        | 3N37          | 0,33   | 5.1   | 265      | 869          | 0,35   | 5.4   | 277      | 909   |
|        |       |        |         |        |        | N350          | 0,34   | 5.2   | 272      | 892          | 0,36   | 5.5   | 282      | 925   |
|        |       |        |         |        |        | 3N38          | 0,45   | 6.9   | 304      | 997          | 0,47   | 7.3   | 316      | 1038  |
|        |       |        |         |        |        | N105          | 0,49   | 7.6   | 321      | 1053         | 0,50   | 7.7   | 328      | 1076  |



# 10 mm AUTO

Test barrel: 140 mm (5½"), 1 in 16" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 25,00 mm (0.988")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,0   | 155   | HP-XTP | Hornady | 31,9   | 1.256  | N340          | 0,40   | 6.2   | 355      | 1165         | 0,46   | 7.1   | 374      | 1225  |
|        |       |        |         |        |        | 3N37          | 0,43   | 6.6   | 359      | 1178         | 0,52   | 7.9   | 380      | 1247  |
|        |       |        |         |        |        | N350          | 0,42   | 6.4   | 359      | 1178         | 0,51   | 7.8   | 380      | 1247  |
| 10,0   | 155   | FP     | Rainier | 31,9   | 1.256  | N340          | 0,45   | 6.9   | 369      | 1211         | 0,50   | 7.6   | 386      | 1266  |
|        |       |        |         |        |        | N350          | 0,49   | 7.6   | 379      | 1243         | 0,55   | 8.5   | 400      | 1311  |
|        |       |        |         |        |        | 3N37          | 0,51   | 7.8   | 373      | 1224         | 0,56   | 8.6   | 392      | 1284  |
| 11,7   | 180   | HP     | Speer   | 31,9   | 1.256  | N340          | 0,37   | 5.6   | 312      | 1024         | 0,42   | 6.4   | 332      | 1089  |
|        |       |        |         |        |        | 3N37          | 0,40   | 6.1   | 333      | 1093         | 0,47   | 7.2   | 350      | 1147  |
|        |       |        |         |        |        | N350          | 0,34   | 5.2   | 328      | 1076         | 0,43   | 6.6   | 345      | 1130  |
| 13,0   | 200   | FMJ/FP | Hornady | 31,9   | 1.256  | N105          | 0,56   | 8.6   | 372      | 1220         | 0,64   | 9.9   | 390      | 1280  |
|        |       |        |         |        |        | N340          | 0,30   | 4.6   | 267      | 876          | 0,35   | 5.3   | 288      | 945   |
|        |       |        |         |        |        | 3N37          | 0,35   | 5.4   | 291      | 955          | 0,41   | 6.3   | 309      | 1014  |
|        |       |        |         |        |        | N350          | 0,31   | 4.7   | 284      | 932          | 0,38   | 5.8   | 302      | 989   |
|        |       |        |         |        |        | N105          | 0,47   | 7.3   | 325      | 1066         | 0,53   | 8.2   | 339      | 1111  |

# .41 Remington Magnum

Test barrel: 150 mm (6"), 1 in 18¾" twist  
Primers: Large Pistol  
Cases: W-W Super, trim-to length 32,50 mm (1.280")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 11,0   | 170   | JHC    | Sierra  | 40,1   | 1.579  | N350          | 0,72   | 11.1  | 415      | 1362         | 0,81   | 12.5  | 451      | 1480  |
|        |       |        |         |        |        | N105          | 0,99   | 15.3  | 465      | 1526         | 1,10   | 16.9  | 500      | 1642  |
|        |       |        |         |        |        | N110          | 1,41   | 21.8  | 500      | 1640         | 1,50   | 23.2  | 532      | 1746  |
| 13,6   | 210   | HP/XTP | Hornady | 40,1   | 1.579  | N350          | 0,67   | 10.3  | 373      | 1224         | 0,74   | 11.4  | 400      | 1312  |
|        |       |        |         |        |        | N105          | 0,84   | 13.0  | 405      | 1329         | 0,95   | 14.6  | 437      | 1435  |
|        |       |        |         |        |        | N110          | 1,20   | 18.5  | 436      | 1430         | 1,28   | 19.8  | 466      | 1529  |

# .44 S&W Special

Test barrel: 150 mm (6"), 1 in 18" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 29,30 mm (1.153")

| Bullet |       |           |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 11,7   | 180   | HP-XTP    | Hornady | 37,3   | 1.469  | N320          | 0,44   | 6.8   | 285      | 935          | 0,49   | 7.6   | 315      | 1033  |
|        |       |           |         |        |        | N330          | 0,50   | 7.7   | 308      | 1010         | 0,56   | 8.6   | 338      | 1109  |
|        |       |           |         |        |        | N340          | 0,57   | 8.8   | 319      | 1047         | 0,62   | 9.6   | 349      | 1145  |
|        |       |           |         |        |        | N350          | 0,64   | 9.9   | 318      | 1043         | 0,68   | 10.5  | 350      | 1148  |
| 13,0   | 200   | HP-XTP    | Hornady | 37,3   | 1.469  | N320          | 0,41   | 6.3   | 270      | 886          | 0,45   | 6.9   | 294      | 965   |
|        |       |           |         |        |        | N330          | 0,50   | 7.7   | 287      | 942          | 0,55   | 8.5   | 315      | 1033  |
|        |       |           |         |        |        | N340          | 0,54   | 8.3   | 293      | 961          | 0,59   | 9.1   | 325      | 1066  |
|        |       |           |         |        |        | N350          | 0,59   | 9.1   | 296      | 971          | 0,64   | 9.9   | 329      | 1079  |
| 14,3   | 220   | FPJ-Match | Sierra  | 37,3   | 1.469  | N320          | 0,34   | 5.2   | 221      | 725          | 0,39   | 6.0   | 255      | 837   |
|        |       |           |         |        |        | N330          | 0,40   | 6.2   | 232      | 761          | 0,46   | 7.1   | 271      | 889   |
|        |       |           |         |        |        | N340          | 0,43   | 6.6   | 248      | 814          | 0,48   | 7.4   | 278      | 912   |
|        |       |           |         |        |        | N350          | 0,50   | 7.7   | 254      | 833          | 0,56   | 8.6   | 289      | 948   |
|        |       |           |         |        |        |               |        |       |          |              |        |       |          |       |

# .44 S&W Special

Test barrel: 150 mm (6"), 1 in 18" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 29,30 mm (1.153")

| Bullet |       |         |           |        | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|-----------|--------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg       | C.O.L. |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |           | [mm]   | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 15,6   | 240   | JTC-Sil | Hornady   | 37,6   | 1.480  | N320               | 0,31   | 4.8   | 193      | 633          | 0,36   | 5.6   | 223      | 732   |
|        |       |         |           |        |        | N330               | 0,35   | 5.4   | 206      | 676          | 0,40   | 6.2   | 234      | 768   |
|        |       |         |           |        |        | N340               | 0,41   | 6.3   | 222      | 728          | 0,46   | 7.1   | 252      | 827   |
|        |       |         |           |        |        | N350               | 0,49   | 7.6   | 239      | 784          | 0,53   | 8.2   | 271      | 889   |
| 15,6   | 240   | SWC/HP  |           | 39,1   | 1.539  | N320 <sup>1)</sup> | 0,30   | 4.7   | 214      | 702          | 0,38   | 5.9   | 260      | 853   |
|        |       |         |           |        |        | N330 <sup>1)</sup> | 0,36   | 5.5   | 229      | 751          | 0,41   | 6.3   | 270      | 886   |
|        |       |         |           |        |        | N32C <sup>1)</sup> | 0,38   | 5.9   | 238      | 781          | 0,41   | 6.3   | 255      | 837   |
| 16,1   | 248   | LRNFP   | Gunhill   | 37,2   | 1.465  | N32C <sup>1)</sup> | 0,38   | 5.9   | 238      | 781          | 0,41   | 6.3   | 255      | 837   |
|        |       |         |           |        |        | N320               | 0,31   | 4.8   | 193      | 633          | 0,36   | 5.6   | 226      | 741   |
| 16,2   | 250   | FPJ     | Sierra    | 37,3   | 1.469  | N320               | 0,31   | 4.8   | 193      | 633          | 0,36   | 5.6   | 226      | 741   |
|        |       |         |           |        |        | N330               | 0,32   | 4.9   | 191      | 627          | 0,39   | 6.0   | 228      | 748   |
|        |       |         |           |        |        | N340               | 0,36   | 5.6   | 197      | 646          | 0,42   | 6.5   | 237      | 778   |
|        |       |         |           |        |        | N350               | 0,44   | 6.8   | 229      | 751          | 0,49   | 7.6   | 260      | 853   |
| 17,3   | 267   | LFN     | Intercast | 39,1   | 1.539  | N320               | 0,34   | 5.2   | 242      | 794          | 0,39   | 6.0   | 262      | 860   |
|        |       |         |           |        |        | N330               | 0,41   | 6.3   | 261      | 856          | 0,45   | 6.9   | 281      | 922   |
|        |       |         |           |        |        | N340               | 0,42   | 6.5   | 256      | 840          | 0,46   | 7.1   | 278      | 912   |
|        |       |         |           |        |        | N350               | 0,47   | 7.3   | 259      | 850          | 0,52   | 8.0   | 282      | 925   |
| 17,3   | 267   | LFN     |           | 39,1   | 1.539  | N320 <sup>1)</sup> | 0,25   | 3.8   | 193      | 633          | 0,34   | 5.3   | 242      | 794   |
|        |       |         |           |        |        | N330 <sup>1)</sup> | 0,32   | 4.9   | 216      | 709          | 0,38   | 5.9   | 254      | 833   |
|        |       |         |           |        |        | N340 <sup>1)</sup> | 0,43   | 6.6   | 261      | 856          | 0,47   | 7.3   | 282      | 925   |
|        |       |         |           |        |        |                    |        |       |          |              |        |       |          |       |

<sup>1)</sup> Cowboy Action Shooting load

# .44 Remington Magnum

Test barrel: 175 mm (7"), 1 in 20" twist  
Primers: Large Pistol  
Cases: Remington, trim-to length 32,40 mm (1.275")

| Bullet |       |           |         |        | Powder | Starting load      |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|---------|--------|--------|--------------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg     | C.O.L. |        | Type               | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |         | [mm]   | [in.]  |                    | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 11,7   | 180   | HP-XTP    | Hornady | 40,7   | 1.602  | N320               | 0,69   | 10.6  | 407      | 1335         | 0,77   | 11.8  | 437      | 1432  |
|        |       |           |         |        |        | N340               | 0,84   | 13.0  | 439      | 1440         | 0,92   | 14.1  | 472      | 1549  |
|        |       |           |         |        |        | N350               | 0,89   | 13.7  | 448      | 1470         | 0,99   | 15.3  | 481      | 1578  |
|        |       |           |         |        |        | N105               | 1,23   | 19.0  | 498      | 1634         | 1,40   | 21.6  | 543      | 1781  |
|        |       |           |         |        |        | N110               | 1,63   | 25.2  | 492      | 1614         | 1,76   | 27.1  | 534      | 1751  |
| 13,0   | 200   | HP-XTP    | Hornady | 40,7   | 1.602  | N320               | 0,65   | 10.0  | 381      | 1250         | 0,73   | 11.3  | 408      | 1339  |
|        |       |           |         |        |        | N340               | 0,76   | 11.7  | 410      | 1345         | 0,84   | 13.0  | 437      | 1434  |
|        |       |           |         |        |        | 3N37               | 0,89   | 13.7  | 433      | 1421         | 0,98   | 15.2  | 462      | 1515  |
|        |       |           |         |        |        | N350               | 0,83   | 12.8  | 416      | 1365         | 0,95   | 14.6  | 453      | 1487  |
|        |       |           |         |        |        | N105               | 1,09   | 16.8  | 459      | 1506         | 1,26   | 19.4  | 500      | 1642  |
| 14,3   | 220   | FPJ-Match | Sierra  | 40,7   | 1.602  | N110               | 1,58   | 24.4  | 494      | 1621         | 1,71   | 26.3  | 530      | 1740  |
|        |       |           |         |        |        | N320               | 0,59   | 9.1   | 350      | 1148         | 0,67   | 10.4  | 375      | 1232  |
|        |       |           |         |        |        | N340               | 0,72   | 11.1  | 381      | 1250         | 0,80   | 12.3  | 405      | 1328  |
|        |       |           |         |        |        | N350               | 0,83   | 12.8  | 402      | 1319         | 0,96   | 14.8  | 439      | 1441  |
|        |       |           |         |        |        | N105               | 1,08   | 16.7  | 432      | 1417         | 1,22   | 18.8  | 470      | 1542  |
| 15,6   | 240   | JTC-Sil   | Hornady | 40,7   | 1.602  | N320               | 0,58   | 8.9   | 331      | 1086         | 0,63   | 9.7   | 354      | 1161  |
|        |       |           |         |        |        | N340               | 0,67   | 10.3  | 358      | 1175         | 0,75   | 11.5  | 380      | 1247  |
|        |       |           |         |        |        | 3N37               | 0,78   | 12.0  | 372      | 1220         | 0,86   | 13.3  | 402      | 1318  |
|        |       |           |         |        |        | N350               | 0,77   | 11.9  | 375      | 1230         | 0,83   | 12.8  | 399      | 1308  |
|        |       |           |         |        |        | N105               | 0,95   | 14.7  | 404      | 1325         | 1,08   | 16.6  | 437      | 1434  |
| 16,1   | 248   | LRNFP     | Gunhill | 40,5   | 1.594  | N110               | 1,32   | 20.4  | 435      | 1427         | 1,43   | 22.1  | 470      | 1541  |
|        |       |           |         |        |        | N32C <sup>1)</sup> | 0,49   | 7.6   | 272      | 892          | 0,62   | 9.6   | 309      | 1014  |
|        |       |           |         |        |        |                    |        |       |          |              |        |       |          |       |

<sup>1)</sup> Cowboy Action Shooting load

# .44 Remington Magnum

Test barrel: 175 mm (7"), 1 in 20" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 32,40 mm (1.275")

| Bullet |       |           |           |                          | Powder             | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|-----------|-----------|--------------------------|--------------------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type      | Mfg       | C.O.L.                   |                    | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |           |           | [mm] [in.]               |                    | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 16,2   | 250   | FPJ-Match | Sierra    | 40,7 1.602               | N320               | 0,55          | 8.5    | 314   | 1030     | 0,63         | 9.7    | 344   | 1130     |
|        |       |           |           |                          | N340               | 0,65          | 10.0   | 341   | 1119     | 0,73         | 11.2   | 370   | 1213     |
|        |       |           |           |                          | N350               | 0,75          | 11.6   | 366   | 1201     | 0,85         | 13.1   | 395   | 1295     |
|        |       |           |           |                          | N105               | 0,87          | 13.4   | 382   | 1253     | 1,08         | 16.7   | 429   | 1406     |
| 17,3   | 267   | LFN       | Interkast | 42,7 <sup>1)</sup> 1.681 | N340               | 0,68          | 10.5   | 357   | 1171     | 0,75         | 11.5   | 376   | 1232     |
|        |       |           |           |                          | 3N37               | 0,77          | 11.9   | 365   | 1198     | 0,85         | 13.2   | 391   | 1284     |
|        |       |           |           |                          | N350               | 0,74          | 11.4   | 360   | 1181     | 0,82         | 12.7   | 385   | 1262     |
|        |       |           |           |                          | N110               | 1,32          | 20.4   | 422   | 1385     | 1,41         | 21.8   | 450   | 1476     |
|        |       |           |           |                          | N340 <sup>1)</sup> | 0,38          | 5.9    | 224   | 735      | 0,49         | 7.5    | 288   | 945      |
| 17,3   | 267   | LSWC      | Hornady   | 40,5 1.681               | N32C <sup>1)</sup> | 0,50          | 7.7    | 271   | 889      | 0,60         | 9.3    | 301   | 988      |
| 19,4   | 300   | HP-XTP    |           | 43,6 <sup>1)</sup> 1.717 | N340               | 0,62          | 9.6    | 304   | 997      | 0,68         | 10.5   | 323   | 1061     |
| 19,4   | 300   | JSP       | Sierra    | 43,6 <sup>1)</sup> 1.717 | 3N37               | 0,67          | 10.3   | 308   | 1010     | 0,74         | 11.4   | 336   | 1102     |
|        |       |           |           |                          | N350               | 0,68          | 10.5   | 315   | 1033     | 0,76         | 11.7   | 344   | 1128     |
|        |       |           |           |                          | N105               | 0,85          | 13.1   | 349   | 1145     | 0,94         | 14.6   | 375   | 1231     |
|        |       |           |           |                          | N110               | 1,21          | 18.7   | 384   | 1260     | 1,31         | 20.2   | 419   | 1374     |
|        |       |           |           |                          | N340               | 0,61          | 9.4    | 296   | 971      | 0,66         | 10.2   | 319   | 1046     |
|        |       |           |           |                          | 3N37               | 0,65          | 10.0   | 305   | 1001     | 0,73         | 11.2   | 332   | 1089     |
|        |       |           |           |                          | N350               | 0,64          | 9.9    | 296   | 971      | 0,72         | 11.1   | 326   | 1071     |
| N105   | 0,82  | 12.7      | 342       | 1122                     | 0,90               | 13.8          | 368    | 1208  |          |              |        |       |          |
| N110   | 1,15  | 17.7      | 369       | 1211                     | 1,23               | 19.1          | 398    | 1305  |          |              |        |       |          |

<sup>1)</sup> The cartridge overall length exceeds the CIP maximum.  
<sup>2)</sup> Cowboy Action Shooting load

# .45 ACP

Test barrel: 150 mm (6"), 1 in 16" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 22,70 mm (0.893")

| Bullet |       |         |           |            | Powder | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|---------|-----------|------------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type    | Mfg       | C.O.L.     |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |         |           | [mm] [in.] |        | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 10,0   | 154   | LSWC    | Interkast | 31,5 1.240 | N320   | 0,38          | 5.9    | 315   | 1033     | 0,41         | 6.4    | 341   | 1117     |
|        |       |         |           |            | N340   | 0,49          | 7.6    | 344   | 1129     | 0,53         | 8.2    | 369   | 1211     |
| 11,7   | 180   | LSWC    | Interkast | 31,6 1.244 | N320   | 0,35          | 5.4    | 296   | 971      | 0,39         | 6.0    | 321   | 1053     |
|        |       |         |           |            | N340   | 0,44          | 6.8    | 311   | 1020     | 0,48         | 7.4    | 337   | 1104     |
| 12,0   | 185   | TMJ-SWC | Speer     | 31,5 1.240 | N310   | 0,27          | 4.2    | 258   | 846      | 0,30         | 4.6    | 277   | 909      |
|        |       |         |           |            | N320   | 0,36          | 5.6    | 278   | 913      | 0,39         | 6.1    | 301   | 988      |
|        |       |         |           |            | N340   | 0,46          | 7.1    | 303   | 993      | 0,50         | 7.7    | 330   | 1082     |
| 12,0   | 185   | FN      | Rainier   | 30,5 1.201 | N320   | 0,37          | 5.8    | 291   | 955      | 0,41         | 6.3    | 316   | 1037     |
|        |       |         |           |            | N340   | 0,47          | 7.3    | 303   | 994      | 0,51         | 7.9    | 333   | 1093     |
|        |       |         |           |            | N350   | 0,57          | 8.8    | 325   | 1065     | 0,61         | 9.4    | 357   | 1170     |
| 12,0   | 185   | HP      | Nosler    | 28,7 1.130 | N310   | 0,28          | 4.3    | 249   | 817      | 0,33         | 5.1    | 286   | 938      |
|        |       |         |           |            | N320   | 0,34          | 5.2    | 249   | 817      | 0,38         | 5.9    | 280   | 919      |
|        |       |         |           |            | N340   | 0,45          | 6.9    | 290   | 951      | 0,51         | 7.9    | 328   | 1076     |
| 13,0   | 200   | LSWC    | Interkast | 31,5 1.240 | N310   | 0,24          | 3.7    | 252   | 827      | 0,26         | 4.0    | 272   | 892      |
|        |       |         |           |            | N320   | 0,30          | 4.7    | 271   | 888      | 0,33         | 5.1    | 292   | 958      |
|        |       |         |           |            | N340   | 0,39          | 6.1    | 295   | 966      | 0,43         | 6.6    | 317   | 1039     |
|        |       |         |           |            | N350   | 0,43          | 6.7    | 279   | 916      | 0,47         | 7.3    | 303   | 996      |
| 13,0   | 200   | FMJ-CT  | Hornady   | 31,5 1.240 | N320   | 0,32          | 5.0    | 261   | 855      | 0,35         | 5.4    | 283   | 928      |
|        |       |         |           |            | N340   | 0,40          | 6.2    | 276   | 906      | 0,44         | 6.8    | 300   | 986      |
|        |       |         |           |            | N350   | 0,43          | 6.7    | 279   | 916      | 0,47         | 7.3    | 303   | 996      |
|        |       |         |           |            | N310   | 0,24          | 3.7    | 219   | 719      | 0,27         | 4.2    | 235   | 771      |
| 14,9   | 230   | FMJ-RN  | Hornady   | 32,0 1.260 | N320   | 0,32          | 4.9    | 239   | 784      | 0,34         | 5.2    | 259   | 850      |
|        |       |         |           |            | N340   | 0,38          | 5.9    | 253   | 830      | 0,41         | 6.4    | 278   | 912      |
|        |       |         |           |            | N350   | 0,43          | 6.7    | 257   | 845      | 0,47         | 7.2    | 280   | 920      |

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

# .45 Colt

Test barrel: 150 mm (6"), 1 in 16" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 32,50 mm (1.279")

| Bullet |       |           |           |            | Powder             | Starting load |        |       |          | Maximum load |        |       |          |
|--------|-------|-----------|-----------|------------|--------------------|---------------|--------|-------|----------|--------------|--------|-------|----------|
| Weight |       | Type      | Mfg       | C.O.L.     |                    | Type          | Weight |       | Velocity |              | Weight |       | Velocity |
| [g]    | [grs] |           |           | [mm] [in.] |                    | [g]           | [grs]  | [m/s] | [fps]    | [g]          | [grs]  | [m/s] | [fps]    |
| 11,7   | 180   | LSWC      | Interkast | 40,5 1.594 | N320               | 0,55          | 8.6    | 341   | 1119     | 0,60         | 9.2    | 367   | 1204     |
|        |       |           |           |            | N330               | 0,66          | 10.1   | 362   | 1188     | 0,71         | 10.9   | 389   | 1276     |
|        |       |           |           |            | N340               | 0,69          | 10.7   | 362   | 1188     | 0,74         | 11.5   | 391   | 1283     |
|        |       |           |           |            | N350               | 0,75          | 11.6   | 363   | 1191     | 0,83         | 12.8   | 399   | 1309     |
| 12,0   | 185   | HP/XTP    | Hornady   | 40,5 1.594 | N320               | 0,57          | 8.7    | 334   | 1096     | 0,62         | 9.6    | 360   | 1181     |
|        |       |           |           |            | N340               | 0,71          | 10.9   | 342   | 1122     | 0,76         | 11.8   | 377   | 1237     |
|        |       |           |           |            | N350               | 0,80          | 12.3   | 346   | 1135     | 0,86         | 13.2   | 382   | 1253     |
| 12,0   | 185   | FN        | Rainier   | 40,5 1.594 | N320               | 0,57          | 8.9    | 328   | 1076     | 0,62         | 9.6    | 358   | 1175     |
|        |       |           |           |            | N330               | 0,67          | 10.4   | 333   | 1093     | 0,73         | 11.2   | 367   | 1204     |
|        |       |           |           |            | N340               | 0,72          | 11.1   | 343   | 1125     | 0,78         | 12.1   | 383   | 1257     |
|        |       |           |           |            | N350               | 0,80          | 12.3   | 346   | 1135     | 0,88         | 13.6   | 389   | 1276     |
| 13,0   | 200   | FMJ-CT    | Hornady   | 40,5 1.594 | N320               | 0,52          | 8.1    | 317   | 1040     | 0,58         | 8.9    | 342   | 1122     |
|        |       |           |           |            | N320               | 0,56          | 8.7    | 326   | 1070     | 0,61         | 9.4    | 347   | 1138     |
| 13,0   | 200   | LSWC      | Hornady   | 40,5 1.594 | N340               | 0,70          | 10.9   | 341   | 1119     | 0,75         | 11.6   | 364   | 1194     |
|        |       |           |           |            | N320 <sup>1)</sup> | 0,44          | 6.8    | 259   | 850      | 0,56         | 8.7    | 318   | 1043     |
| 13,0   | 200   | LRN       |           | 40,5 1.594 | N330 <sup>1)</sup> | 0,52          | 8.0    | 267   | 876      | 0,56         | 8.6    | 298   | 978      |
|        |       |           |           |            | N320               | 0,49          | 7.5    | 286   | 938      | 0,54         | 8.3    | 306   | 1004     |
| 14,9   | 230   | FMJ-Match | Sierra    | 40,5 1.594 | N340               | 0,63          | 9.7    | 301   | 988      | 0,68         | 10.4   | 330   | 1083     |
|        |       |           |           |            | N320               | 0,47          | 7.3    | 257   | 843      | 0,51         | 7.8    | 280   | 919      |
|        |       |           |           |            | N340               | 0,60          | 9.2    | 281   | 922      | 0,64         | 9.8    | 307   | 1007     |
| 16,2   | 250   | HP-XTP    | Hornady   | 40,5 1.594 | N320               | 0,47          | 7.3    | 257   | 843      | 0,51         | 7.8    | 280   | 919      |
|        |       |           |           |            | N340               | 0,60          | 9.2    | 281   | 922      | 0,64         | 9.8    | 307   | 1007     |
|        |       |           |           |            | N350               | 0,69          | 10.7   | 297   | 974      | 0,72         | 11.2   | 321   | 1053     |
|        |       |           |           |            | N105               | 0,91          | 14.1   | 296   | 971      | 0,97         | 15.0   | 344   | 1129     |
|        |       |           |           |            | N320 <sup>1)</sup> | 0,36          | 5.6    | 229   | 751      | 0,45         | 6.9    | 279   | 915      |
| 16,2   | 250   | LRN       |           | 40,5 1.594 | N330 <sup>1)</sup> | 0,41          | 6.3    | 238   | 781      | 0,49         | 7.5    | 293   | 961      |
|        |       |           |           |            | N32C <sup>1)</sup> | 0,54          | 8.3    | 271   | 889      | 0,62         | 9.6    | 305   | 1001     |

<sup>1)</sup> Cowboy Action Shooting load

# .45 Winchester Magnum

Test barrel: 300 mm (12"), 1 in 16" twist  
 Primers: Large Pistol  
 Cases: Winchester, trim-to length 30,30 mm (1.192")

| Bullet |       |         |         |            | Powder | Starting load |        |         |            | Maximum load |        |       |          |
|--------|-------|---------|---------|------------|--------|---------------|--------|---------|------------|--------------|--------|-------|----------|
| Weight |       | Type    | Mfg     | C.O.L.     |        | Type          | Weight |         | Velocity   |              | Weight |       | Velocity |
| [g]    | [grs] |         |         | [mm] [in.] |        | [g]           | [grs]  | [m/s]   | [fps]      | [g]          | [grs]  | [m/s] | [fps]    |
| 12,0   | 185   | HP/XTP  | Hornady | 38,5 1.516 | N350   | 0,81          | 12.5   | 451     | 1478       | 0,99         | 15.3   | 512   | 1678     |
|        |       |         |         |            | 3N37   | 0,91          | 14.0   | 507     | 1662       | 1,03         | 15.9   | 534   | 1750     |
|        |       |         |         |            | N105   | 1,13          | 17.4   | 523     | 1714       | 1,33         | 20.5   | 576   | 1888     |
| 13,0   | 200   | TMJ-SWC | Speer   | 38,5 1.516 | 3N37   | 0,91          | 14.0   | 487     | 1598       | 1,00         | 15.4   | 513   | 1683     |
| 13,0   | 200   | FMJ-CT  | Hornady | 39,5 1.555 | N105   | 1,07          | 16.5   | 483     | 1583       | 1,23         | 19.0   | 532   | 1744     |
| 13,0   | 200   | TMJ-SWC | Speer   | 38,5 1.516 | N110   | 1,49          | 22.9   | 528     | 1731       | 1,64         | 25.2   | 575   | 1885     |
|        |       |         |         |            | 14,9   | 230           | FMJ-RN | Hornady | 39,5 1.555 | 3N37         | 0,82   | 12.7  | 410      |
| 16,2   | 250   | HP-XTP  | Hornady | 38,2 1.504 | N110   | 1,41          | 21.8   | 495     | 1622       | 1,55         | 23.9   | 532   | 1744     |
|        |       |         |         |            | N350   | 0,65          | 10.0   | 309     | 1014       | 0,78         | 12.0   | 373   | 1224     |
|        |       |         |         |            | 3N37   | 0,75          | 11.6   | 354     | 1160       | 0,83         | 12.8   | 401   | 1314     |
|        |       |         |         |            | N105   | 0,90          | 13.8   | 393     | 1289       | 1,03         | 15.8   | 431   | 1414     |
| N110   | 1,20  | 18.4    | 442     | 1448       | 1,37   | 21.1          | 481    | 1576    |            |              |        |       |          |

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

## .454 Casull

Test barrel: 240 mm (9½"), 1 in 24" twist  
 Primers: Small Rifle  
 Cases: Freedom Arms, trim-to length 33,30 mm (1.311")

| Bullet |       |           |                       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-----------|-----------------------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type      | Mfg                   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |           |                       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 12,0   | 185   | HP/XTP    | Hornady <sup>1)</sup> | 41,7   | 1.642  | 3N37          | 1,14   | 17.6  | 531      | 1742         | 1,36   | 21.0  | 588      | 1929  |
|        |       |           |                       |        |        | N350          | 1,18   | 18.2  | 537      | 1762         | 1,39   | 21.4  | 593      | 1946  |
|        |       |           |                       |        |        | N105          | 1,72   | 26.5  | 606      | 1988         | 1,90   | 29.3  | 653      | 2142  |
| 14,6   | 225   | HP        | Speer                 | 42,7   | 1.681  | 3N37          | 1,09   | 16.8  | 474      | 1555         | 1,27   | 19.6  | 523      | 1716  |
|        |       |           |                       |        |        | N105          | 1,59   | 24.5  | 536      | 1759         | 1,73   | 26.7  | 580      | 1903  |
|        |       |           |                       |        |        | N110          | 2,00   | 30.9  | 566      | 1857         | 2,17   | 33.5  | 614      | 2014  |
| 16,2   | 250   | HP/XTP    | Hornady               | 42,8   | 1.685  | 3N37          | 1,01   | 15.6  | 437      | 1434         | 1,18   | 18.2  | 487      | 1598  |
|        |       |           |                       |        |        | N105          | 1,39   | 21.4  | 481      | 1578         | 1,57   | 24.2  | 536      | 1759  |
|        |       |           |                       |        |        | N110          | 1,82   | 28.1  | 523      | 1716         | 1,99   | 30.7  | 569      | 1867  |
| 19,4   | 300   | Plated HP | Speer                 | 44,5   | 1.752  | 3N37          | 0,99   | 15.3  | 396      | 1299         | 1,10   | 17.0  | 433      | 1421  |
|        |       |           |                       |        |        | N105          | 1,28   | 19.8  | 431      | 1414         | 1,49   | 23.0  | 484      | 1588  |
|        |       |           |                       |        |        | N110          | 1,71   | 26.4  | 474      | 1555         | 1,86   | 28.7  | 514      | 1686  |

<sup>1)</sup>The crimping is done is over the bullet ogive.

## .50 AE

Test barrel: 150 mm (6"), 1 in 19" twist  
 Primers: Large Pistol  
 Cases: Speer, trim-to length 32,50 mm (1.280")

| Bullet |       |      |       |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|------|-------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type | Mfg   | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |      |       | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 19,4   | 300   | JHP  | IMI   | 40,0   | 1.575  | N105          | 1,26   | 19.4  | 395      | 1296         | 1,38   | 21.3  | 436      | 1430  |
|        |       |      |       |        |        | N110          | 1,64   | 25.3  | 396      | 1299         | 1,86   | 28.7  | 456      | 1496  |
|        |       |      |       |        |        | N120          | 2,11   | 32.6  | 363      | 1191         | 2,33   | 36.0  | 417      | 1368  |
| 21,1   | 325   | UCHP | Speer | 40,0   | 1.575  | N105          | 1,15   | 17.7  | 357      | 1171         | 1,26   | 19.4  | 406      | 1332  |
|        |       |      |       |        |        | N110          | 1,56   | 24.1  | 386      | 1266         | 1,75   | 27.0  | 437      | 1434  |
|        |       |      |       |        |        | N120          | 1,99   | 30.7  | 348      | 1142         | 2,23   | 34.4  | 408      | 1339  |

## .500 S&W Magnum

Test barrel: 280 mm (11"), 1 in 18" twist  
 Primers: Large Rifle  
 Cases: Starline, trim-to length 41,00 mm (1.614")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 19,4   | 300   | TMJ    | Speer   | 51,0   | 2.008  | 3N38          | 1,90   | 29.3  | 535      | 1755         | 2,20   | 33.9  | 583      | 1913  |
|        |       |        |         |        |        | N105          | 1,98   | 30.6  | 536      | 1759         | 2,33   | 36.0  | 599      | 1965  |
|        |       |        |         |        |        | N110          | 2,59   | 40.0  | 570      | 1870         | 2,95   | 45.5  | 652      | 2139  |
| 22,7   | 350   | HP/XTP | Hornady | 50,4   | 1.984  | 3N38          | 1,64   | 25.3  | 468      | 1535         | 2,00   | 30.9  | 537      | 1762  |
|        |       |        |         |        |        | N105          | 1,75   | 27.0  | 487      | 1598         | 2,02   | 31.2  | 522      | 1713  |
|        |       |        |         |        |        | N110          | 2,19   | 33.8  | 521      | 1709         | 2,51   | 38.7  | 574      | 1883  |
| 25,9   | 400   | JSP    | Sierra  | 52,1   | 2.051  | N120          | 2,76   | 42.6  | 503      | 1650         | 2,90F  | 44.7F | 539      | 1768  |
|        |       |        |         |        |        | 3N38          | 1,63   | 25.2  | 441      | 1447         | 1,85   | 28.5  | 486      | 1594  |
|        |       |        |         |        |        | N105          | 1,62   | 25.0  | 440      | 1444         | 2,01   | 31.0  | 505      | 1657  |
|        |       |        |         |        |        | N110          | 2,11   | 32.6  | 485      | 1591         | 2,42   | 37.3  | 536      | 1759  |

F = Full case

# 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: 125 mm (5"), 1 in 18" twist  
 Primers: Small Pistol  
 Cases: Remington, trim-to length 29,10 mm (1.146")

| Bullet |       |         |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 9,4    | 145   | LSWC    | Gunhill | 37,5   | 1.476  | N32C          | 0,32   | 4.9   | 307      | 1007         | 0,37   | 5.7   | 314      | 1030  |
| 10,2   | 158   | FNCM    |         | 36,7   | 1.445  | N32C          | 0,27   | 4.2   | 261      | 856          | 0,36   | 5.6   | 306      | 1004  |
| 10,3   | 158   | LSWC/HP |         | 36,5   | 1.437  | N320          | 0,21   | 3.3   | 230      | 755          | 0,25   | 3.8   | 256      | 840   |
|        |       |         |         |        |        | N330          | 0,23   | 3.6   | 240      | 787          | 0,27   | 4.1   | 269      | 883   |

## .357 Magnum

Test barrel: 150 mm (6"), 1 in 18½" twist  
 Primers: Small Rifle  
 Cases: Remington, trim-to length 32,60 mm (1.283")

| Bullet |       |         |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|---------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type    | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |         |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 10,2   | 158   | FNCM    | Gunhill | 40,2   | 1.583  | N32C          | 0,29   | 4.5   | 265      | 869          | 0,37   | 5.7   | 309      | 1014  |
| 10,3   | 158   | LSWC/HP |         | 40,0   | 1.575  | N330          | 0,25   | 3.9   | 241      | 791          | 0,32   | 5.0   | 304      | 997   |
|        |       |         |         |        |        | N340          | 0,29   | 4.5   | 245      | 804          | 0,38   | 5.9   | 320      | 1050  |

## .44 S&W Special

Test barrel: 165 mm (6½"), 1 in 18" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 29,30 mm (1.153")

| Bullet |       |        |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|--------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type   | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |        |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 15,6   | 240   | SWC/HP | Gunhill | 39,1   | 1.539  | N320          | 0,30   | 4.7   | 214      | 702          | 0,38   | 5.9   | 260      | 853   |
|        |       |        |         | 37,2   | 1.465  | N330          | 0,36   | 5.5   | 229      | 751          | 0,41   | 6.3   | 270      | 886   |
| 16,1   | 248   | LRNFP  |         | 39,1   | 1.539  | N32C          | 0,38   | 5.9   | 238      | 781          | 0,41   | 6.3   | 255      | 837   |
| 17,3   | 267   | LFN    |         |        | N320   | 0,25          | 3.8    | 193   | 633      | 0,34         | 5.3    | 242   | 794      |       |
|        |       |        |         |        | N330   | 0,32          | 4.9    | 216   | 709      | 0,38         | 5.9    | 254   | 833      |       |
|        |       |        |         |        | N340   | 0,43          | 6.6    | 261   | 856      | 0,47         | 7.3    | 282   | 925      |       |

## .44 Remington Magnum

Test barrel: 175 mm (7"), 1 in 20" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 32,40 mm (1.276")

| Bullet |       |       |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type  | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |       |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 16,1   | 248   | LRNFP | Gunhill | 40,5   | 1.594  | N32C          | 0,49   | 7.6   | 272      | 892          | 0,62   | 9.6   | 309      | 1014  |
| 17,3   | 267   | LFN   |         | 40,0   | 1.575  | N340          | 0,38   | 5.9   | 224      | 735          | 0,49   | 7.5   | 288      | 945   |
| 17,3   | 267   | LSWC  |         | 40,5   | 1.681  | N32C          | 0,50   | 7.7   | 271      | 889          | 0,60   | 9.3   | 301      | 988   |

## .45 Colt

Test barrel: 150 mm (6"), 1 in 16" twist  
 Primers: Large Pistol  
 Cases: Remington, trim-to length 32,50 mm (1.280")

| Bullet |       |       |         |        | Powder | Starting load |        |       |          | Maximum load |        |       |          |       |
|--------|-------|-------|---------|--------|--------|---------------|--------|-------|----------|--------------|--------|-------|----------|-------|
| Weight |       | Type  | Mfg     | C.O.L. |        | Type          | Weight |       | Velocity |              | Weight |       | Velocity |       |
| [g]    | [grs] |       |         | [mm]   | [in.]  |               | [g]    | [grs] | [m/s]    | [fps]        | [g]    | [grs] | [m/s]    | [fps] |
| 13,0   | 200   | LRN   | Gunhill | 40,5   | 1.594  | N320          | 0,44   | 6.8   | 259      | 850          | 0,56   | 8.7   | 318      | 1043  |
|        |       |       |         | 40,5   | 1.594  | N330          | 0,52   | 8.0   | 267      | 876          | 0,56   | 8.6   | 298      | 978   |
| 16,2   | 250   | LRN   |         | 40,5   | 1.594  | N320          | 0,36   | 5.6   | 229      | 751          | 0,45   | 6.9   | 279      | 915   |
|        |       |       |         |        | N330   | 0,41          | 6.3    | 238   | 781      | 0,49         | 7.5    | 293   | 961      |       |
| 16,3   | 251   | LRNFP |         | 40,3   | 1.587  | N32C          | 0,54   | 8.3   | 271      | 889          | 0,62   | 9.6   | 305      | 1001  |











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