RELOADING GUIDE

FOR

RIFLES AND HANDGUNS

1-01

VIHTAVUORI

THIS NEW VIHTAVUORI RELOADING GUIDE 1-01 REPLACES ALL RIFLE AND HANDGUN RELOADING DATA PUBLISHED IN PREVIOUS RELOADING GUIDES INCLUDING EDITIONS FROM 1st TO 7th. IN ORDER TO ENSURE THE HIGHEST POSSIBLE LEVEL OF SAFETY PREVIOUS GUIDES SHOULD NO LONGER BE USED.

Burning Rate Chart

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

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PHONE (630) 350-1116

1. **R-1**, Norma
2. **N310**, VIHTAVUORI
3. **Bullseye**, Hercules
4. **Solo 1000**, Scot
5. **No 2**, Accurate Arms
6. **Red Dot**, Hercules
7. **Clays**, Hodgdon
8. **N320**, VIHTAVUORI
9. **Royal Scot**, Scot
10. **HP-38**, Hodgdon
11. **231**, Winchester
12. **453,** Scot
13. **Hi-Skor 700-X**, IMR Co.
14. **WST**, Winchester
15. **International**, Hodgdon
16. **Green Dot**, Hercules
17. **N330,** VIHTAVUORI
18. **PB**, IMR Co.
19. **No 5,** Accurate Arms
20. **Pearl Scot**, Scot
21. **WSL**, Winchester
22. **Universal**, Hodgdon
23. **Unique**, Hercules
24. **SR-7625**, IMR Co.
25. **WSF,** Winchester
26. **HS-6**, Hodgdon
27. **N340**, VIHTAVUORI
28. **540**, Winchester
29. **Herco,** Hercules
30. **SR-4756**, IMR Co
31. **Solo 1250**, Scot
32. **3N37,** VIHTAVUORI
33. **Hi-Skor 800-X,** IMR Co.
34. **No. 7**, Accurate Arms
35. **Solo 1500**, Scot
36. **N350,** VIHTAVUORI
37. **3N38,** VIHTAVUORI
38. **HS-7**, Hodgdon
39. **Blue Dot**, Hercules
40. **N105**, VIHTAVUORI
41. **No. 9**, Accurate Arms
42. **2400,** Hercules
43. **N110,** VIHTAVUORI
44. **R-123,** Norma
45. **H110**, Hodgdon
46. **296,** Winchester
47. **SR-4759**, IMR Co.
48. **N120,** VIHTAVUORI
49. **IMR-4427**, IMR Co.
50. **H4227**, Hodgdon
51. **N130**, VIHTAVUORI
52. **1680,** Accurate Arms
53. **N-200,** Norma
54. **N133**, VIHTAVUORI
55. **Brigadier 4197,** Scot
56. **H4198**, Hodgdon
57. **IMR-4198,** IMR Co.
58. **2015**, Accurate Arms
59. **Reloder 7**, Hercules
60. **IMR-3031**, IMR Co.
61. **N-201**, Norma
62. **H322,** Hodgdon
63. **2230,** Accurate Arms
64. **Brigadier 3032,** Scot
65. **748**, Winchester
66. **BL-C(2),** Hodgdon
67. **2460**, Accurate Arms
68. **H335,** Hodgdon
69. **H4895**, Hodgdon
70. **Reloder 12**, Hercules
71. **IMR-4895**, IMR Co.
72. **N135,** VIHTAVUORI
73. **IMR-4064**, IMR Co.
74. **Brigadier 4065,** Scot
75. **2520,** Accurate Arms
76. **IMR-4320**, IMR Co.
77. **N-202,** Norma
78. **N540** VIHTAVUORI
79. **N140**, VIHTAVUORI
80. **2700**, Accurate Arms
81. **Reloder 15**, Hercules
82. **H380**, Hodgdon
83. **760**, Winchester
84. **H414**, Hodgdon
85. **N550**, VIHTAVUORI
86. **N150,** VIHTAVUORI
87. **4350**, Accurate Arms
88. **IMR-4350**, IMR Co.
89. **H4350,** Hodgdon
90. **N-204**, Norma
91. **Brigadier 4351**, Scot
92. **Reloder 19**, Hercules
93. **N160**, VIHTAVUORI
94. **N560**, VIHTAVUORI
95. **IMR-4831**, IMR Co
96. **H4831**, Hodgdon
97. **3100**, Accurate Arms
98. **MRP,** Norma
99. **N165**, VIHTAVUORI
100. **Reloder 22**, Hercules
101. **IMR-7828**, IMR Co.
102. **8700,** Accurate Arms
103. **N170**, VIHTAVUORI
104. **H1000**. Hodgdon
105. **H870**, Hodgdon
106. **24N41**, VIHTAVUORI
107. **50BMG**, Hodgdon
108. **20N29**, VIHTAVUORI

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Preface

This Vihtavuori Reloading Guide 1-01 for rifles and handguns contains the results of the tests conducted by Nexplo Vihtavuori Oy together with Nammo Lapua Oy. 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/ SAAMI maximum pressure specifications, whichever is lower. The listed maximum loads must never be exceeded.

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

The contents of the Vihtavuori Reloading Guide 1-01 has been revised since the publication of the preceeding Reloading Guide 2-00 with some new information. A new item is the load data for the 6.5 - 286 Norma, a new cartridge specially applicated for long range target shooting. Also the load data for the 9mm Luger and the .38 Super has been updated with a new Vihtavuori powder for handgun cartridges, the 3N38.

During the past few years there have been a lot of changes both at Vihtavuori and Lapua plants. Inspite of the organisational changes the brand name "Vihtavuori" in reloading powders remains unchanged. The Vihtavuori powders are manufactured by Nexplo Vihtavuori Oy in Vihtavuori plant. Sales and marketing of reloading powders as well as customer service is carried out by Nammo Lapua Oy at Lapua plants. The contact information for customer service is given in the back of this guide. We wish You successful reloading with Vihtavuori powders.

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VIHTAVUORI

Rifle Powders

N100 series

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

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

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

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

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

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

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

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

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

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

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

N500 series

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

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

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

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

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

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

Vihtavuori High Energy powders are available in three burning rates:

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

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

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

Powders For .50 BMG

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

Handgun Powders

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

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

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

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

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

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

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

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

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

About the Data

Disclaimer

As Nammo Lapua Oy has no control over improper storage, handling, loading or use of our powders after they have left the factory, we make no warranty of any kind, either expressed or implied, limited or full. We specifically disclaim all warranties of fitness for a particular purpose and merchantability. We specifically disclaim all liability for consequential damages of any kind whatsoever, whether or not due to seller's negligence or based on strict product liability or principle of indemnity or contribution, Nammo Lapua Oy neither assumes nor authorizes any person to assume for it any liability in connection with the use of this product.

How To Use The Data

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

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

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

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

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

The traditional sign of overpressure is a flattened primer. When flattened primers start to occur, it is a definite warning that the charge should be reduced, quickly. Brass getting into the ejector and extractor cavities is a worse case. Blown out primers are 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 9 and 10.

Pressure

There are numerous factors which can change the ballistic performance of a load even when the data is followed exactly. For example: The internal dimensions of a firearm can vary greatly even between two of the same make and model. Pressures can vary to extremes as different firearms are used. Each change in brand and even within different lots of a specific brand component can cause notable ballistic changes. Too, changes in ambient temperature can also cause ballistic altering pressures. Not every bullet of a given diameter and weight will produce alike pressure. Changes in case brand can also 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 must supplemented by a good reloading handbook such as the Lapua Reloading Manual, the DBI Metallic Cartridge Reloading, the Vihtavuori Reloading Manual or other recognized manuals that may offer all appropriate information.

Properties of Smokeless Powder

Smokeless powders, or propellants, are essentially mixtures of chemicals designed to bum 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 bum rapidly and vigorously when ignited.

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

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

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

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

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

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

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

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

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

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

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

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

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

How to Check Smokeless Powder for Deterioration

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

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

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

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

Never salvage powder from old cartridges and do not attempt to blend salvaged powder with new powder. Don't accumulate old powder stocks. The best way to dispose of deteriorated smokeless powder is to 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.

Recommendations for Storage of Smokeless Powder

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

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

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

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

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

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

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

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

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

Reloading Safety

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

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

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

Reloading Safety

LEAD EXPOSURE

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

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

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

RIFLE RELOADING DATA

DISCLAIMER

I. All of this reloading information has been provided by Nexplo Vihtavuori Oy and Nammo Lapua Oy. The data given here were obtained in laboratory conditions following strictly the CIP (Commission International Permanente) June 13, 1990 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.

II. IT IS A MUST FOR EVERY RELOADER TO READ THE RELOADING SAFETY RULES ON THE PAGES 9 AND 10 OF THIS GUIDE.

.17 Remington

Test barrel: 22", 1 in 16" twist
Primers: Small Rifle
Cases: Remington, trim-to length 1.787"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
25	HP	Remington	2.145	N135	**22.8**	**4040**

.22 Hornet

Test barrel: 23½", 1 in 16" twist
Primers: Small Rifle
Cases: Sako, trim-to length1.394"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
40	Spire Point	Speer	1.713	N110	7.8	2296	**9.5**	**2586**
45	Spitzer	Speer	1.713	N110	7.2	2107	**8.8**	**2371**
50	Spitzer	Speer	1.713	N110	7.1	1962	**8.3**	**2203**
				N120	9.3	1961	**10.7**	**2237**
55	Spitzer	Speer	1.713	N110	6.2	1809	**7.7**	**2046**
				N120	8.8	1840	**10.3**	**2142**

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

.222 Remington

Test barrel: 23", 1 in 14" twist
Primers: Small Rifle
Cases: LAPUA, trim-to length1.693"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
40	Spire Point	Speer	2.087	N110	14.3	2974	**16.2**	**3207**
	Hornet	Sierra	2.047	N120	20.1	3251	**20.8**	**3373**
	Spire Point	Speer	2.047	N120	19.9	3193	**21.3**	**3449**
				N130	21.6	3191	**23.2**	**3435**
				N133	22.9	3229	**25.2**	**3517**
45	Spitzer	Speer	2.087	N110	13.6	2781	**15.4**	**3008**
				N120	19.3	3035	**20.7**	**3257**
	Hornet	Hornady	2.110	N130	21.8	3120	**23.2**	**3340**
	Spitzer	Speer	2.087	N133	22.7	3094	**24.2**	**3331**
50	SXSP	Hornady	2.118	N120	18.7	2873	**20.0**	**3090**
				N130	20.5	2918	**22.1**	**3142**
				N133	22.2	2969	**24.0**	**3215**
				N135	21.6	2725	**23.5**	**3024**
55	SP	Sako	2.134	N120	18.0	2736	**19.6**	**2956**
	FMJBT	Hornady	2.118	N130	20.0	2803	**21.4**	**3025**
	SP	Sako	2.134	N133	21.7	2857	**23.4**	**3066**
				N135	22.6	2840	**23.3**	**2949**
60	HP	Hornady	2.126	N120	17.1	2556	**18.9**	**2789**
				N130	19.2	2640	**21.1**	**2877**
				N133	20.8	2690	**22.6**	**2928**
				N135	21.6	2744	**23.5**	**2847**
69	HPBT	Sierra*	2.126	N130	18.1	2456	**19.5**	**2641**
				N133	19.5	2519	**21.0**	**2690**
				N135	20.2	2533	**22.1**	**2728**
	*) The test barrel rifle twist 1 in 7"			N140	22.2	2554	**23.7**	**2748**

.223 Remington

Test barrel: 25", 1 in 12" twist
Primers: Small Rifle
Cases: LAPUA, trim-to length1.752"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
40	Spire Point	Speer	2.075	N120	22.4	3373	**24.0**	**3640**
				N130	24.4	3399	**26.3**	**3685**
				N133	25.0	3347	**26.8**	**3615**
45	Spitzer	Speer	2.126	N120	21.7	3187	**23.5**	**3463**
				N130	23.5	3235	**25.6**	**3511**
				N133	24.9	3245	**27.0**	**3565**
				N135	25.5	3185	**26.9**	**3396**

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

.223 Remington (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
50	"TNT"-HP	Speer	2.244	N120	21.2	3048	**23.2**	**3314**
				N130	23.0	3097	**24.9**	**3368**
				N133	24.6	3113	**26.2**	**3398**
				N135	25.0	3077	**26.5**	**3333**
52	HPBT	Sierra	2.244	N130	21.5	2959	**24.0**	**3274**
				N133	23.5	3003	**25.8**	**3315**
				N135	24.3	3014	**27.0**	**3333**
55	FMJBT	Hornady	2.244	N120	19.6	2820	**22.5**	**3134**
				N130	22.1	2931	**24.1**	**3217**
				N133	22.9	2927	**25.3**	**3231**
				N135	24.3	2983	**26.8**	**3267**
				N140	25.3	2881	**26.9**	**3081**
60	HP	Hornady	2.244	N130	21.4	2796	**23.7**	**3063**
				N133	22.4	2772	**25.0**	**3076**
				N135	23.9	2860	**25.9**	**3075**
				N140	24.8	2758	**26.5**	**2954**
69	HPBT*	Sierra	2.244	N133	20.5	2565	**23.0**	**2828**
				N135	22.3	2595	**24.7**	**2890**
				N140	23.6	2633	**26.4**	**2922**
				N540	24.9	2679	**27.3**	**2984**
75	BTHP	Hornady*	2.260	N135	20.9	2465	**23.5**	**2728**
				N140	22.7	2475	**25.3**	**2774**
	*) Test barrel twist 1 in 7".			N540	23.5	2515	**25.9**	**2807**

.22 PPC - USA

Test barrel: 24", 1 in 14" twist
Primers: Small Rifle
Cases: Sako, trim-to length1.508"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
52	HPBT	Sierra	2.024	N120	21.9	3171	**22.7**	**3254**
				N130	21.8	3027	**24.3**	**3335**
				N133	23.1	3086	**25.8**	**3386**
				N135	25.1	3130	**27.8**	**3443**
55	Spitzer	Speer	2.039	N130	21.8	2946	**24.3**	**3202**
				N133	22.8	2996	**25.4**	**3232**
				N135	25.5	3091	**28.3**	**3435**

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.22-250 Remington

Test barrel: 22", 1 in 14" twist
Primers: Large Rifle
Cases: Remington, trim-to length1.902"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
45	Spitzer	Speer	2.319	N130	30.2	3580	**33.3**	**3884**
				N135	33.4	3564	**36.2**	**3885**
				N140	35.3	3576	**38.7**	**3941**
50	Spitzer	Speer	2.346	N130	26.4	3070	**33.0**	**3522**
				N135	29.4	3161	**36.0**	**3579**
				N140	31.3	3133	**36.3**	**3588**
				N150	32.1	3135	**37.3**	**3584**
55	Spitzer	Speer	2.346	N135	30.0	3145	**33.3**	**3460**
				N140	32.8	3185	**35.8**	**3483**
				N150	33.7	3189	**37.3**	**3521**
60	HP	Hornady	2.346	N140	30.8	2994	**34.3**	**3314**
				N150	31.2	2977	**35.4**	**3318**
69	HPBT	Sierra*	2.346	N140	27.2	2649	**33.7**	**3134**
				N540	28.4	2729	**34.6**	**3225**
				N150	28.4	2697	**34.9**	**3157**
				N550	30.8	2794	**37.2**	**3305**
				N160	35.4	2747	**41.3**	**3239**
	*) Test barrrel twist 1 to 7".			N560	34.4	2748	**42.9**	**3310**

.220 Swift

Test barrel: 24", 1 in 14" twist
Primers: Large Rifle
Cases: RWS, trim-to length 2.196"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
50	FMJ	Sako	2.677	N140	**38.6**	**3900**
55	SP	Sako	2.677	N140	**37.0**	**3250**
55	SP	Norma	2.677	N160	**43.1**	**3710**

6 PPC -USA

Test barrel: 23", 1 in 14" twist
Primers: Small Rifle
Cases: Sako, trim-to length 1.508"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
68	HPFB	EUBER	2.110	N130	23.4	2761	**25.9**	**3040**
				N133	25.1	2752	**28.1**	**3113**
70	HPBT	Sierra	2.110	N120	21.5	2653	**23.9**	**2956**
				N130	22.6	2686	**26.0**	**3058**
				N133	24.5	2705	**27.6**	**3063**

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6mm BR Norma

Test barrel: 25½", 1 in 8" twist
Primers: Small Rifle
Cases: LAPUA, trim-to length 1.508"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
70	HPBT	Sierra	2.087	N133	23.7	2694	**29.2**	**3104**
				N135	26.7	2795	**33.2**	**3271**
77	Silver Jacket	LAPUA	2.362	N133	28.5	2894	**31.0**	**3156**
				N140	31.7	2946	**33.9**	**3215**
				N540	33.1	2992	**35.6**	**3271**
90	FMJ	LAPUA	2.347	N140	23.3	2372	**29.2**	**2808**
				N540	24.3	2333	**32.6**	**3012**
90	Silver Jacket	LAPUA	2.362	N135	28.6	2717	**31.5**	**2966**
				N140	30.2	2772	**32.7**	**3018**
				N540	31.2	2795	**33.9**	**3064**
100	Mega	LAPUA	2.177	N140	23.2	2247	**28.5**	**2667**
				N540	25.5	2326	**30.6**	**2772**
105	Scenar	LAPUA	2.347	N140	23.6	2247	**28.4**	**2641**
				N540	24.5	2244	**29.8**	**2717**
105	Silver Jacket	LAPUA	2.362	N140	28.2	2497	**31.1**	**2759**
				N150	28.5	2516	**31.6**	**2753**
				N540	29.0	2543	**32.2**	**2818**

.243 Winchester

Test barrel: 23", 1 in 10" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.039"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
70	SXSP	Hornady	2.638	N133	33.4	**3084**	**36.8**	**3219**
				N135	36.4	**2957**	**40.5**	**3310**
				N140	38.7	**3003**	**43.2**	**3389**
				N150	39.7	**3019**	**44.1**	**3384**
				N160	46.1	**3004**	**51.3**	**3451**
80	FMJ	Hornady	2.638	N135	33.6	**2837**	**37.0**	**3044**
				N140	35.6	**2856**	**39.4**	**3092**
				N150	35.0	**2876**	**38.9**	**3068**
				N160	43.6	**2869**	**48.6**	**3222**

NOTE!
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.243 Winchester (cont'd)

Test barrel: 23", 1 in 10" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.039"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
87	HPBT	Hornady	2.677	N140	34.2	**2738**	**38.3**	**2974**
				N150	33.7	**2757**	**37.9**	**2947**
				N160	41.9	**2744**	**46.6**	**3084**
				N560	43.2	**2890**	**48.0**	**3149**
90	FMJ	LAPUA	2.689	N150	23.3	**2346**	**32.8**	**2907**
				N550	30.6	**2595**	**39.0**	**3146**
				N160	31.1	**2605**	**40.9**	**3127**
95	X	Barnes	2.709	N560	27.5	**2171**	**37.6**	**2727**
100	SPBT	Hornady	2.650	N160	40.8	**2615**	**45.3**	**2903**
				N560	41.3	**2697**	**45.7**	**2962**
				N165	44.0	**2647**	**49.3**	**2932**
100	Mega	LAPUA	2.689	N150	23.6	**2274**	**32.4**	**2868**
				N550	32.8	**2566**	**42.0**	**3199**
				N160	35.9	**2654**	**42.8**	**3084**
105	Spitzer	Speer	2.670	N160	35.2	**2440**	**39.2**	**2634**
				N560	35.2	**2486**	**38.8**	**2719**
105	Scenar	LAPUA	2.689*	N550	34.6	**2579**	**40.4**	**2923**
				N160	36.4	**2579**	**42.8**	**2936**
	*) Test barrrel twist 1 to 8".			N165	42.2	**2635**	**48.5**	**3012**

6mm Remington

Test barrel: 22½", 1 in 9" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.224"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
70	HPBT	Sierra	2.811	N135	36.6	3096	**40.4**	**3321**
				N140	39.6	3148	**43.3**	**3400**
				N150	39.1	3145	**43.4**	**3376**
				N160	47.3	3121	**52.4**	**3520**
80	FMJ	Hornady	2.815	N135	32.7	2794	**35.9**	**2967**
				N140	35.5	2918	**39.2**	**3087**
				N150	34.2	2850	**37.9**	**3035**
				N160	44.1	3032	**48.9**	**3245**
87	SP	Hornady	2.815	N140	34.5	2744	**38.0**	**2916**
				N150	33.9	2742	**37.3**	**2894**
				N160	44.4	2876	**49.1**	**3141**
				N165	47.5	2951	**52.7**	**3110**
100	SPBT	Hornady	2.815	N160	41.7	2729	**45.8**	**2927**
				N165	43.4	2745	**48.1**	**2940**
105	Spitzer	Speer	2.815	N165	42.3	2726	**46.5**	**2888**

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
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.240 Weatherby Magnum

Test barrel: 23½", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Norma, trim-to length 2.222"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
75	HPFB	Hornady	3.075	N150	42.1	3081	**49.3**	**3569**
				N550	46.6	3177	**52.7**	**3684**
				N160	48.9	3115	**54.7**	**3628**
77	HPFB	LAPUA	3.075	N150	43.0	3058	**49.1**	**3548**
				N550	46.7	3138	**52.3**	**3628**
				N160	48.9	3112	**54.5**	**3591**
90	Scenar	LAPUA	3.075	N550	42.3	2889	**50.2**	**3361**
				N160	46.0	2882	**53.1**	**3364**
				N165	50.1	2902	**57.7**	**3420**
100	Mega	LAPUA	3.075	N550	42.1	2751	**49.2**	**3205**
				N160	44.1	2775	**50.8**	**3166**
				N165	49.1	2765	**56.1**	**3264**
105	Spitzer	Speer	3.063	N160	38.9	2575	**49.4**	**3106**
				N560	46.3	2767	**54.0**	**3192**
				N165	47.5	2746	**55.8**	**3215**

.25-06 Remington

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

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
87	SPBT	Speer	3.122	N140	32.6	2709	**42.1**	**3145**
				N150	35.1	2755	**44.7**	**3207**
				N160	45.0	2904	**54.6**	**3338**
				N165	50.4	2977	**60.7**	**3433**
100	SPBT	Speer	3.197	N140	38.4	2768	**44.5**	**3033**
				N150	39.7	2809	**45.8**	**3051**
				N160	48.8	2888	**54.8**	**3170**
				N560	45.0	2780	**55.2**	**3240**
				N165	51.1	2915	**58.6**	**3212**
				N170	50.2	2727	**62.3**	**3192**
120	Spizer	Speer	3.157	N150	26.7	2106	**35.6**	**2539**
				N160	34.6	2328	**45.2**	**2762**
				N560	39.4	2440	**49.8**	**2912**
				N165	37.5	2399	**48.1**	**2790**
				N170	45.1	2491	**55.2**	**2859**
120	HPBT	Sierra	3.150	N160	39.3	2443	**47.6**	**2852**
				N560	42.1	2522	**51.3**	**2955**
				N165	43.6	2540	**52.0**	**2911**
				N170	47.6	2513	**58.6**	**2958**

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

6.5 x 55 Swedish Mauser

Test barrel: 26½", 1 in 8½" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.157"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
77	SP	Norma	2.620	N133			**42.4**	**3380**
				N135			**44.1**	**3380**
				N140			**45.1**	**3400**
80	FMJ	Norma	2.620	N140			**44.4**	**3280**
85	HP	Sierra	2.800	N150	43.9	3002	**46.1**	**3252**
100	HP	Sierra	2.850	N140	40.0	2748	**42.3**	**2916**
				N540	39.7	2696	**43.4**	**2971**
				N150	40.6	2727	**43.4**	**2920**
				N550	42.6	2784	**46.0**	**3051**
				N160	47.3	2785	**50.6**	**3001**
100	FMJ	LAPUA	2.756	N160	46.1	2748	**51.0**	**3024**
108	Scenar	LAPUA	3.071	N140	36.6	2524	**39.8**	**2780**
				N540	37.5	2611	**40.8**	**2870**
				N150	39.5	2724	**42.1**	**2890**
				N550	41.0	2720	**44.4**	**2993**
				N160	47.0	2785	**49.3**	**2963**
				N560	48.1	2774	**51.6**	**3012**
				N165	48.7	2823	**51.2**	**3000**
108	Silver Jacket	LAPUA	3.149	N140	37.3	2697	**41.7**	**2946**
				N540	38.9	2707	**43.1**	**3018**
				N150	38.4	2680	**43.4**	**2976**
120	HPBT	Sierra	3.024	N140	34.8	2346	**39.4**	**2619**
				N540	36.6	2470	**40.6**	**2726**
				N150	36.3	2389	**40.5**	**2648**
				N550	39.5	2544	**43.4**	**2830**
				N160	44.7	2607	**48.4**	**2823**
				N560	46.8	2599	**49.3**	**2801**
123	Scenar	LAPUA	3.150	N140	34.7	2292	**40.3**	**2657**
				N540	36.6	2305	**41.8**	**2680**
				N150	36.2	2321	**41.7**	**2709**
123	Silver Jacket	LAPUA	3.149	N150	37.1	2553	**41.3**	**2782**
				N550	37.2	2513	**43.5**	**2887**
				N160	42.4	2592	**45.1**	**2756**
130	HPBT	Norma	3.150	N140	33.7	2286	**38.0**	**2537**
				N540	34.5	2353	**38.8**	**2602**
				N150	33.7	2263	**38.6**	**2526**
				N550	37.9	2401	**42.2**	**2684**
				N160	41.7	2391	**46.1**	**2654**
				N560	45.3	2523	**49.3**	**2784**

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

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

6.5 x 55 Swedish Mauser (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
139	Scenar	LAPUA	3.126	N150	31.9	2100	**36.9**	**2357**
				N550	36.7	2269	**40.0**	**2510**
				N160	41.1	2359	**44.4**	**2570**
				N560	43.1	2409	**46.8**	**2648**
				N165	44.4	2395	**48.5**	**2628**
139	Silver Jacket	LAPUA	3.149	N550	36.6	2329	**41.3**	**2697**
				N160	39.2	2448	**44.4**	**2648**
				N560	42.1	2408	**47.8**	**2746**
139	HPBT	Norma	3.071	N150	33.8	2182	**38.4**	**2457**
				N550	37.8	2346	**41.0**	**2582**
				N160	40.9	2320	**44.8**	**2566**
				N560	43.1	2349	**47.8**	**2664**
				N165	45.2	2408	**49.1**	**2644**
140	HPBT	Sierra	3.091	N150	33.1	2173	**37.8**	**2413**
				N550	37.1	2292	**40.7**	**2540**
				N160	42.2	2392	**45.6**	**2602**
				N560	44.1	2450	**47.5**	**2677**
				N165	45.0	2408	**49.0**	**2641**
144	FMJBT	LAPUA	79.0	N150	32.1	2198	**34.6**	**2339**
				N160	41.4	2385	**44.1**	**2523**
				N560	43.2	2379	**47.5**	**2648**
				N165	42.4	2398	**46.0**	**2543**
				N170	46.0	2228	**51.1**	**2526**
155	HPBT	Sierra	3.110	N150	31.2	2047	**35.0**	**2246**
				N550	35.2	2160	**39.2**	**2386**
				N160	39.1	2186	**43.5**	**2429**
				N560	39.7	2187	**44.0**	**2452**
				N165	40.9	2151	**46.1**	**2417**
				N170	42.7	2086	**49.3**	**2425**
155	Mega	LAPUA	2.874	N560	40.3	2167	**46.3**	**2454**
				N165	40.5	2150	**47.0**	**2405**
160	RN	Hornady	3.035	N140			**36.9**	**2350**
				N160			**44.9**	**2510**

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

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

6.5 - .284 Norma

Test barrel: ", 1 in " twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.165"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
108	Scenar	LAPUA	3.110	N160	51.2	2999	**57.9**	**3409**
				N560	53.3	3005	**61.3**	**3465**
				N165	57.5	3064	**61.7**	**3383**
139	Scenar	LAPUA	3.110	N160	44.9	2618	**53.0**	**2995**
				N560	48.8	2671	**55.9**	**3055**
				N165	52.3	2703	**59.3**	**3081**

.264 Winchester Magnum

Test barrel: 24", 1 in 9" twist
Primers: Large Rifle Magnum
Cases: Remington, trim-to length 2.492"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
85	HP	Sierra	3.098	N140	53.5	3277	**57.4**	**3540**
				N160	62.5	3420	**67.1**	**3770**
140	FMJ	Hornady	3.255	N140	43.5	2862	**47.8**	**3020**
				N160	53.5	2771	**57.1**	**2990**
140	HPBT	Sierra	3.339	N160	46.5	2529	**54.7**	**2815**
				N560	48.3	2589	**57.4**	**2913**
160	FMJ	Norma	3.255	N160	52.0	2618	**56.3**	**2690**

.270 Winchester

Test barrel: 24½", 1 in 10" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.531"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	Spitzer	Speer	3.150	N150	45.5	2986	**49.8**	**3150**
				N160	56.8	3040	**63.1**	**3340**
				N165	58.2	3023	**64.8**	**3297**
130	SP	Remington	3.228	N160	51.6	2778	**55.5**	**2969**
				N560	54.9	2808	**59.7**	**3034**
130	SPBT	Speer	3.268	N165	53.8	2751	**59.3**	**2975**
150	Spitzer	Speer	3.228	N160	44.1	2397	**49.4**	**2604**
150	SP	Remington	3.228	N560	50.9	2634	**55.5**	**2808**
				N165	47.9	2461	**53.2**	**2650**
160	Partition	Nosler	3.331	N160	46.6	2436	**51.0**	**2607**
				N165	47.8	2452	**53.1**	**2634**

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

.270 Weatherby Magnum

Test barrel: 25½", 1 in 12" twist
Primers: Large Rifle Magnum
Cases: Remington, trim-to length 2.535"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	PSP	Remington	3.110	N550	64.7	3300	72.4	3722
				N160	69.4	3343	75.4	3681
				N165	76.6	3343	83.7	3708
130	PSPCL	Remington	3.236	N160	64.5	3251	71.7	3315
				N165	69.3	2961	76.6	3302
				N560	71.0	3027	77.5	3322
135	HPBT	Sierra	3.268	N160	63.6	2866	68.8	3186
				N165	69.3	2925	72.8	3265
				N560	69.9	3047	74.6	3341
150	Partition	Nosler	3.250	N560	66.2	2867	71.5	3150
				N165	64.9	2781	73.0	3124
				N170	71.2	2797	79.7	3157

7mm-08 Remington

Test barrel: 24", 1 in 9½" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.028"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Hornady	2.717	N130	37.1	2854	**40.8**	**3100**
				N133	39.0	2908	**43.2**	**3132**
				N135	41.4	2878	**45.6**	**3184**
				N140	42.4	2849	**47.2**	**3186**
				N150	44.4	2918	**49.4**	**3222**
120	Spitzer	Sierra	2.740	N135	38.7	2619	**42.7**	**2893**
				N140	41.1	2648	**45.4**	**2941**
				N150	42.2	2684	**46.9**	**2967**
140	Ballistic Tip	Nosler	2.740	N135	35.5	2319	**39.1**	**2564**
				N140	38.5	2407	**42.7**	**2657**
				N150	39.2	2419	**43.6**	**2652**
160	SPBT	Sierra	2.795	N140	36.5	2263	**40.3**	**2472**
				N150	36.8	2266	**40.7**	**2449**
				N160	45.8	2421	**50.2**	**2667**
168	HPBT	Sierra	2.795	N150	35.0	2199	**39.1**	**2399**
				N550	37.4	2283	**42.0**	**2534**
				N160	42.9	2295	**47.0**	**2507**
175	Mag-Tip	Speer	2.795	N140	32.8	2017	**36.2**	**2195**
				N150	32.0	1953	**35.2**	**2123**
				N160	39.4	2099	**43.1**	**2298**

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

7 x 57

Test barrel: 22", 1 in 9½" twist
Primers: Large Rifle
Cases: Sako, trim-to length 2.236"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
120	Spitzer	Sierra	3.012	N135	39.4	2546	**43.4**	**2826**
				N140	42.0	2601	**46.1**	**2873**
				N150	42.4	2620	**46.6**	**2880**
140	Ballistic Tip	Nosler	3.051	N140	38.2	2322	**42.5**	**2568**
				N150	39.8	2391	**43.6**	**2599**
160	SPBT	Sierra	3.051	N150	37.5	2207	**41.4**	**2414**
				N160	45.1	2255	**49.4**	**2539**
175	Mag-Tip	Speer	3.031	N160	40.6	2068	**45.9**	**2319**
				N165	44.6	2147	**49.5**	**2357**

7mm Remington Magnum

Test barrel: 24", 1 in 9" twist
Primers: Large Rifle Magnum
Cases: LAPUA, trim-to length 2.492"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Hornady	3.189	N160	68.5	3263	**75.0**	**3570**
				N560	66.0	3121	**77.1**	**3536**
120	Spitzer	Sierra	3.268	N160	65.1	3006	**71.5**	**3295**
				N165	69.2	2984	**76.3**	**3298**
				N560	62.9	2944	**73.4**	**3312**
145	SPBT	Speer	3.268	N160	56.2	2655	**62.6**	**2901**
				N560	58.6	2788	**65.2**	**3054**
				N165	61.4	2712	**67.7**	**2960**
160	Grand Slam	Speer	3.228	N160	51.3	2465	**56.3**	**2645**
				N560	53.0	2605	**58.8**	**2821**
				N165	55.1	2517	**60.7**	**2707**
160	Spizer	Sierra	3.228	N160	52.6	2433	**60.1**	**2710**
				N165	41.5	2139	**60.8**	**2693**
				N560	49.3	2411	**64.1**	**2843**
168	HPBT	Sierra	3.287	N560	54.9	2468	**63.7**	**2788**
				N165	55.0	2423	**64.8**	**2691**
				N170	61.8	2434	**69.9**	**2709**
175	SBT	Sierra	3.287	N165	46.5	2239	**58.5**	**2575**
				N560	48.7	2299	**58.7**	**2666**
				N170	55.1	2346	**66.2**	**2619**

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
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7mm Weatherby Magnum

Test barrel: 26", 1 in 9" twist
Primers: Large Rifle Magnum
Cases: Weatherby, trim-to length 2.540"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Hornady	3.209	N160	71.5	3411	**78.5**	**3763**
				N560	74.8	3449	**81.7**	**3832**
120	Spitzer	Sierra	3.248	N160	67.9	3155	**74.5**	**3462**
				N560	72.2	3220	**78.2**	**3533**
				N165	73.6	3200	**80.1**	**3512**
160	Sitzer	Sierra	3.248	N160	61.3	2721	**67.6**	**2988**
				N560	64.1	2767	**69.8**	**3037**
				N165	66.4	2755	**72.3**	**3026**
168	HPBT	Sierra	3.209	N160	60.3	2668	**65.2**	**2878**
				N560	62.7	2687	**68.0**	**2976**
				N165	65.3	2690	**69.5**	**2908**

.30 Carbine

Test barrel: 18", 1 in 10" twist
Primers: Small Rifle
Cases: Federal, trim-to length 1.283"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	Plinker	Speer	1.673	N110	13.2	1952	**14.5**	**2121**
110	Spire Point	Speer	1.673	N110	11.9	1761	**13.3**	**1908**

.30-30 Winchester

Test barrel: 20", 1 in 12" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.031"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
105	HP	LAPUA	2.539	N130	29.4	2433	**32.5**	**2668**
				N133	32.6	2542	**36.3**	**2765**
130	FSP	Speer	2.547	N120	24.7	2149	**27.6**	**2344**
				N130	27.3	2196	**30.5**	**2420**
				N133	29.5	2238	**32.8**	**2467**
				N135	31.1	2242	**34.6**	**2455**

BOLD TEXT INDICATES MAXIMUM LOAD - USE WITH CAUTION!
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.30-30 Winchester (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
150	FSP	Speer	2.539	N120	21.9	1824	**24.2**	**1985**
				N130	24.7	1911	**27.5**	**2103**
				N133	25.7	1935	**28.6**	**2115**
				N135	29.4	2000	**32.4**	**2193**
				N140	31.5	2011	**34.7**	**2240**
170	FSP	Speer	2.539	N130	23.8	1813	**26.3**	**1974**
				N133	25.2	1799	**27.6**	**1948**
				N135	27.0	1825	**30.1**	**2015**
				N140	28.2	1803	**31.7**	**2025**

.300 Savage

Test barrel: 23½", 1 in 12" twist
Primers: Large Rifle
Cases: Remington, trim-to length 1.862"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	LAPUA	2.461	N120	32.9	2829	**37.7**	**3232**
				N130	36.5	2962	**40.0**	**3268**
				N133	38.9	2897	**44.0**	**3225**
125	TNT-HP	Speer	2.579	N120	31.0	2444	**35.1**	**2744**
				N130	33.3	2546	**37.4**	**2830**
				N133	38.4	2645	**41.8**	**2900**
150	Mega	LAPUA	2.421	N130	28.1	2182	**33.7**	**2460**
				N135	33.7	2255	**38.5**	**2529**
				N140	36.5	2294	**42.0**	**2598**
165	SBT	Sierra	2.598	N133	33.0	2198	**37.3**	**2481**
				N135	35.5	2267	**39.0**	**2498**
				N140	37.0	2270	**41.4**	**2574**
200	Mega	LAPUA	2.598	N135	32.1	2004	**37.6**	**2308**
				N140	34.5	2071	**40.0**	**2342**
				N540	35.2	2044	**41.0**	**2358**

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

.308 Winchester

Test barrel: 24", 1 in 12" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.008"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
57	ALS*)	LAPUA	2.638	N110	22.4	2989	**33.9**	**3927**
100	HP	LAPUA	2.638	N120	32.4	2789	**35.9**	**3052**
				N130	36.1	2920	**40.7**	**3206**
				N135	41.2	2965	**46.8**	**3290**
110	HP	Sako	2.657	N120	36.3	2800	**40.0**	**3069**
				N130	39.9	2892	**44.1**	**3145**
				N133	43.2	2937	**47.6**	**3210**
123	FMJ	LAPUA	2.634	N130	35.4	2602	**41.1**	**2923**
				N135	42.4	2746	**46.0**	**2953**
125	Ballistic Tip	Nosler	2.756	N130	37.9	2742	**41.7**	**2977**
				N133	41.1	2782	**44.9**	**3028**
				N135	42.8	2796	**47.2**	**3048**
				N140	45.3	2804	**49.9**	**3070**
150	Mega	LAPUA	2.638	N135	31.7	2162	**39.1**	**2557**
				N140	32.2	2126	**40.8**	**2564**
				N540	34.9	2185	**42.6**	**2613**
150	SPBT	Sierra	2.756	N133	37.8	2526	**42.0**	**2730**
				N135	40.4	2558	**44.3**	**2776**
				N140	42.3	2546	**46.8**	**2814**
				N150	44.2	2576	**48.2**	**2790**
150	Lock Base	LAPUA	2.795	N540	42.9	2558	**47.3**	**2835**
150	HPBT	Sierra	2.795	N140	40.8	2495	**45.8**	**2761**
				N540	42.1	2478	**46.9**	**2821**
				N150	42.5	2526	**47.0**	**2767**
				N550	44.8	2523	**49.7**	**2796**
155	Scenar	LAPUA	2.795	N135	34.4	2230	**40.7**	**2615**
				N140	36.7	2227	**43.3**	**2624**
				N150	39.0	2335	**46.8**	**2680**
155	Silver Jacket	LAPUA	2.795	N140	41.1	2497	**46.3**	**2799**
				N150	41.9	2536	**46.9**	**2815**
				N540	41.7	2543	**47.0**	**2848**
155	HPBT	Sierra	2.795	N135	37.1	2413	**41.4**	**2645**
				N140	39.3	2435	**44.2**	**2682**
				N540	40.2	2437	**45.2**	**2722**
				N150	42.6	2540	**46.6**	**2760**
				N550	44.9	2578	**49.8**	**2859**
156	SPBT	Sako	2.685	N135	39.2	2418	**43.1**	**2668**
				N140	41.1	2416	**45.4**	**2695**
				N150	43.6	2509	**48.3**	**2771**

*) Note: A muzzle velocity exceeding 3300 fps may lead to severe barrel fouling!

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

.308 Winchester (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
165	SPBT	Speer	2.795	N133	37.1	2369	**40.7**	**2583**
				N135	38.8	2401	**42.7**	**2627**
				N140	40.6	2419	**44.9**	**2666**
				N150	41.6	2437	**46.3**	**2681**
				N550	44.3	2473	**48.2**	**2694**
167	Scenar	LAPUA	2.795	N140	40.0	2358	**44.0**	**2604**
				N540	39.8	2381	**43.9**	**2637**
				N150	41.9	2428	**46.1**	**2657**
				N550	44.4	2480	**48.9**	**2719**
167	Silver Jacket	LAPUA	2.795	N140	40.9	2474	**44.7**	**2710**
				N150	41.5	2457	**45.8**	**2710**
				N540	41.4	2448	**46.3**	**2740**
168	HPBT	Sierra	2.795	N140	38.3	2313	**42.9**	**2558**
				N540	39.9	2357	**44.6**	**2626**
				N150	40.5	2390	**44.5**	**2607**
				N550	43.4	2461	**47.3**	**2701**
170	FMJBT	LAPUA	2.795	N135	37.9	2351	**41.6**	**2572**
				N140	39.9	2371	**44.1**	**2614**
				N540	40.6	2343	**44.8**	**2656**
				N150	41.3	2419	**45.9**	**2647**
				N550	43.4	2401	**48.5**	**2772**
175	HPBT	Sierra	2.795	N140*	37.3	2247	**41.4**	**2473**
				N540*	39.4	2326	**43.1**	**2557**
				N150*	39.0	2313	**43.7**	**2546**
				N550*	41.7	2368	**45.8**	**2604**
180	SP	Hornady	2.795	N135	36.3	2196	**40.4**	**2430**
				N140	38.5	2225	**42.8**	**2477**
				N150	40.4	2324	**44.5**	**2514**
180	X	Barnes	2.795	N540	34.7	2074	**39.5**	**2353**
				N550	37.9	2163	**42.6**	**2417**
185	FMJBT	LAPUA	2.795	N135	36.0	2189	**39.9**	**2425**
				N140	38.2	2241	**42.2**	**2474**
				N540	39.5	2316	**42.8**	**2509**
185	Scenar	LAPUA	2.795	N150	39.2	2263	**43.5**	**2460**
				N550	42.3	2303	**46.4**	**2536**
185	Silver Jacket	LAPUA	2.795	N140	38.8	2297	**42.8**	**2539**
				N150	39.1	2320	**44.0**	**2559**
				N550	42.8	2303	**47.2**	**2654**

*) These loads have been tested with 175 gr. Berger VLD's, too.

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

.308 Winchester (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
185	Forex	LAPUA	2.732	N540	36.0	2074	**42.0**	**2408**
				N150	35.6	2063	**43.3**	**2433**
				N550	39.0	2109	**46.0**	**2499**
190	HPBT	Sierra	2.795	N140	37.5	2199	**41.6**	**2414**
				N540	37.9	2188	**42.4**	**2467**
				N150	38.6	2195	**42.5**	**2420**
				N550	40.9	2265	**45.6**	**2517**
200	SP	Speer	2.795	N140	36.0	2052	**39.9**	**2256**
				N150	36.9	2092	**40.4**	**2259**

7.62 x 54R (7.62 Russian)

Test barrel: 26", 1 in 10" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.098"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
123	FMJ	LAPUA	2.697	N130	41.9	2831	**46.8**	**3059**
				N133	46.2	2893	**50.4**	**3103**
				N135	46.9	2829	**51.9**	**3116**
150	Mega	LAPUA	2.626	N133	32.3	2110	**43.0**	**2667**
				N135	37.9	2284	**46.4**	**2753**
				N140	40.6	2329	**48.5**	**2792**
155	Scenar	LAPUA	2.972	N135	39.2	2382	**46.2**	**2795**
				N140	42.2	2451	**48.7**	**2854**
				N150	44.5	2526	**50.6**	**2861**
156	SPBT	Sako	2.776	N135	42.6	2471	**47.2**	**2736**
				N140	44.2	2485	**49.2**	**2773**
				N150	46.6	2529	**51.4**	**2810**
167	Scenar	LAPUA	2.953	N540	42.3	2333	**48.1**	**2663**
				N140	44.5	2469	**49.1**	**2722**
				N150	45.8	2443	**50.5**	**2736**
				N550	46.2	2393	**52.5**	**2756**
168	HPBT	Sierra	2.976	N140	42.5	2347	**48.2**	**2653**
				N540	43.6	2370	**49.7**	**2710**
				N150	44.8	2395	**50.0**	**2701**
				N550	47.4	2431	**53.3**	**2773**

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

7.62 x 53R (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
185	Scenar	LAPUA	2.953	N135	40.0	2252	**44.5**	**2516**
				N540	40.9	2226	**46.4**	**2534**
				N140	41.8	2290	**46.8**	**2568**
				N150	43.5	2294	**48.2**	**2575**
				N550	44.2	2275	**50.5**	**2632**
185	Mega	LAPUA	2.756	N140	39.9	2120	**46.1**	**2445**
				N540	41.4	2160	**47.2**	**2484**
				N150	42.3	2160	**47.6**	**2466**
				N550	45.2	2224	**51.3**	**2587**
185	Forex	LAPUA	2.815	N140	38,3	2215	**45.3**	**2569**
				N540	41.3	2339	**46.8**	**2625**
				N150	41.3	2306	**47.7**	**2602**
200	HPBT	Sierra	3.035	N140	38.6	2083	**45.2**	**2414**
				N540	39.2	2107	**45.2**	**2422**
				N150	40.4	2118	**46.4**	**2428**
				N550	43.8	2187	**49.2**	**2500**
220	HPBT	Sierra	3.035	N540	37.9	1968	**42.8**	**2246**
				N150	37.0	1879	**43.3**	**2221**
				N550	41.0	2012	**46.6**	**2332**

.30-06 Springfield

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.484"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
57	ALS*)	LAPUA	3.110	N110	26.5	3110	**37.8**	**3940**
100	HP	LAPUA	3.142	N130	39.7	2846	**48.5**	**3267**
				N133	47.4	2986	**53.8**	**3329**
				N135	50.1	3036	**56.4**	**3383**
				N140	54.0	3034	**60.9**	**3418**
				N540	55.3	3076	**62.9**	**3465**
105	HP	LAPUA	81.0	N133	46.6	2999	**51.2**	**3242**
				N135	49.8	3045	**55.1**	**3314**
				N140	53.4	3058	**59.1**	**3363**
110	RN	Hornady	2.913	N133	48.6	2863	**53.7**	**3224**
				N135	48.5	2834	**53.5**	**3164**
				N140	52.1	2890	**57.8**	**3205**
				N150	55.1	2969	**60.8**	**3286**

*) Note: A muzzle velocity exceeding 3300 fps may lead to severe barrel fouling!

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

.30-06 Springfield (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
123	FMJ	LAPUA	3.142	N133	45.5	2704	**51.0**	**3019**
				N135	49.2	2792	**53.6**	**3069**
				N140	51.6	2794	**57.4**	**3116**
				N540	53.7	2826	**58.9**	**3136**
				N150	55.3	2882	**60.3**	**3195**
125	Ballistic Tip	Nosler	3.307	N135	47.8	2839	**52.4**	**3067**
				N140	51.1	2880	**56.1**	**3142**
				N540	53.8	2887	**60.3**	**3262**
				N150	53.2	2895	**58.7**	**3169**
				N550	57.1	2935	**60.4**	**3116**
150	Mega	LAPUA	3.028	N135	40.1	2333	**47.7**	**2740**
				N140	43.7	2402	**51.2**	**2812**
				N540	45.3	2403	**53.5**	**2930**
150	Lock Base	LAPUA	3.307	N135	45.2	2590	**49.9**	**2790**
				N140	48.2	2630	**53.2**	**2861**
				N540	48.8	2595	**54.6**	**2887**
				N150	50.2	2634	**55.3**	**2877**
				N550	54.1	2688	**59.7**	**3010**
150	HPBT	Sierra	3.307	N140	47.5	2617	**52.8**	**2859**
				N540	50.4	2654	**56.1**	**2973**
				N150	50.7	2646	**56.3**	**2935**
				N550	54.7	2734	**59.7**	**3006**
155	Scenar	LAPUA	3.307	N140	42.9	2447	**49.8**	**2789**
				N150	43.0	2516	**50.9**	**2831**
				N540	47.0	2539	**53.2**	**2907**
156	SPBT	Sako	3.169	N135	45.8	2547	**50.8**	**2793**
				N140	47.8	2543	**52.7**	**2818**
				N150	49.1	2561	**54.5**	**2831**
167	Scenar	LAPUA	3.307	N140	45.5	2418	**50.2**	**2664**
				N540	45.4	2413	**51.8**	**2737**
				N150	47.2	2455	**52.1**	**2694**
				N550	49.6	2556	**55.0**	**2806**
				N160	55.5	2455	**61.5**	**2757**
170	FMJBT	LAPUA	3.307	N140	44.9	2348	**49.9**	**2618**
				N540	45.6	2390	**51.5**	**2687**
				N150	47.2	2409	**52.6**	**2668**
				N550	48.8	2443	**55.6**	**2758**
				N160	56.2	2506	**62.4**	**2794**

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

.30-06 Springfield (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
180	Spitzer	Speer	3.307	N160	52.4	2394	**57.6**	**2603**
180	X	Barnes	3.307	N550	48.6	2311	**54.5**	**2596**
185	Scenar	LAPUA	3.307	N150	44.4	2280	**50.2**	**2548**
				N540	44.1	2255	**48.6**	**2523**
				N550	46.5	2295	**51.7**	**2592**
				N160	53.7	2370	**59.3**	**2650**
				N560	54.3	2373	**61.8**	**2672**
185	Forex	LAPUA	3.189	N150	42.2	2234	**48.1**	**2562**
				N550	46.7	2369	**51.1**	**2697**
				N160	49.7	2415	**53.8**	**2661**
190	HPBT	Sierra	3.307	N150	44.8	2279	**49.3**	**2517**
				N550	47.4	2323	**53.8**	**2664**
				N160	52.7	2376	**58.8**	**2608**
				N560	55.1	2364	**62.4**	**2706**
200	Partition	Nosler	3.307	N150	43.0	2195	**47.5**	**2374**
				N160	52.1	2309	**57.6**	**2510**
220	RN	Hornady	3.307	N160	50.7	2144	**56.0**	**2368**
				N560	53.5	2206	**61.3**	**2517**

.300 H&H Magnum

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Winchester, trim-to length 2.842"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
125	FMJ	Sako	3.484	N160	**77.2**	**3610**
150	Spitzer	Speer	3.582	N160	**75.2**	**3120**
155	SP	Sako	3.582	N160	**72.4**	**3000**
165	Spitzer	Speer	3.590	N160	**70.2**	**2900**
180	SP	Sako	3.590	N160	**67.9**	**2870**
220	RN	Hornady	3.578	N160	**65.1**	**2540**

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

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

.308 Norma Magnum

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Norma, trim-to length 2.551"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
147	FMJ	Norma	3.346	N160	**76.1**	**3410**
155	SP	Sako	3.248	N160	**72.8**	**3100**
180	SP	Sako	3.307	N160	**70.7**	**3050**
200	SP	Sako	3.307	N160	**66.4**	**2810**
220	RN	Hornady	3.358*	N160	**65.1**	**2710**

*) The CIP maximum cartridge overall length is exceeded.

.300 Winchester Magnum

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: LAPUA, trim-to length 2.610"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
110	SP	Hornady	3.268	N160	76.5	3145	**83.3**	**3489**
150	Ballistic Tip	Nosler	3.339	N160	69.0	2789	**76.3**	**3097**
				N165	75.3	2898	**83.2**	**3197**
155	Scenar	LAPUA	3.339	N160	63.7	2733	**71.8**	**3143**
				N560	69.1	2785	**77.2**	**3179**
				N165	72.4	2813	**80.2**	**3189**
167	Scenar	LAPUA	3.339	N160	68.9	2724	**74.5**	**2987**
				N165	73.4	2751	**80.0**	**3032**
180	Partition	Nosler	3.339	N160	65.2	2596	**72.5**	**2867**
				N165	70.8	2626	**77.6**	**2898**
185	Forex	LAPUA	3.307	N560	63.7	2546	**72.7**	**2927**
				N165	64.0	2530	**75.8**	**2959**
				N170	69.5	2497	**80.6**	**2877**
190	HPBT	Sierra	3.339	N560	66.4	2688	**74.6**	**2929**
				N165	68.8	2663	**76.6**	**2876**
				N170	67.3	2572	**77.3**	**2808**
200	HPBT	Sierra	3.339	N160	61.6	2482	**69.8**	**2720**
				N560	60.3	2511	**70.1**	**2774**
				N165	63.4	2503	**73.1**	**2753**
				N170	61.7	2420	**73.8**	**2694**
220	HPBT	Sierra	3.339	N560	51.8	2261	**62.8**	**2543**
				N165	49.6	2165	**64.2**	**2503**
				N170	55.7	2239	**65.6**	**2496**

NOTE!
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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.300 Weatherby Magnum

Test barrel: 26", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: Weatherby, trim-to length 2.815"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
125	Ballistic Tip	Nosler	3.543	N160	80.3	3179	**88.8**	**3612**
150	Ballistic Tip	Nosler	3.547	N160	75.7	2936	**83.6**	**3282**
				N165	82.0	2967	**90.8**	**3300**
165	SPBT	Speer	3.555	N160	74.8	2818	**82.9**	**3193**
				N165	80.9	2823	**89.6**	**3216**
180	SP	Hornady	3.555	N160	72.7	2735	**80.0**	**3038**
				N165	78.6	2756	**86.7**	**3079**
200	HPBT	Sierra	3.555	N560	72.6	2694	**79.8**	**2961**
				N165	70.7	2612	**80.8**	**2914**
				N170	70.9	2566	**85.0**	**2918**

7.62 x 39

Test barrel: 16½", 1 in 9½" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 1.515"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
57	FMJ	LAPUA	2.063	N110	20.2	2805	**24.7**	**3123**
123	FMJ	Sako	2.293	N120			**26.5**	**2430**
123	SP	Sako	2.134	N120			**26.7**	**2360**
123	Mega	LAPUA	2.063	N120	22.0	1975	**25.7**	**2306**
				N130	24.4	2080	**27.3**	**2359**

.303 British

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.212"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
180	SP	Sako	2.897	N140	**41.7**	**2540**

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

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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

8mm Mauser (8 x 57 JS)

Test barrel: 24", 1 in 9½" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.236"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
125	SP	Hornady	2.913	N130	43.2	2867	**48.2**	**3117**
				N133	48.5	2898	**53.9**	**3213**
				N135	49.6	2894	**55.1**	**3196**
150	Spitzer	Speer	2.992	N135	45.9	2628	**51.1**	**2887**
				N140	48.3	2621	**53.9**	**2927**
170	SP	Speer	3.031	N135	44.1	2455	**49.0**	**2718**
				N140	46.1	2452	**51.4**	**2749**
				N150	48.4	2497	**53.7**	**2798**
200	Spitzer	Speer	3.130	N140	42.8	2170	**47.5**	**2490**
				N150	44.1	2230	**49.3**	**2505**
200	Partition	Nosler	3.190	N160	50.5	2235	**56.2**	**2575**

.338 Winchester Magnum

Test barrel: 24", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: LAPUA, trim-to length 2.492"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
200	SP	Hornady	3.346*	N160	72.8	2631	**80.8**	**2969**
225	SP	Hornady	3.307	N160	64.9	2423	**72.9**	**2707**
				N560	68.0	2448	**76.8**	**2766**
250	Scenar	LAPUA	3.307	N550	59.6	2343	**65.5**	**2625**
				N160	60.5	2300	**69.8**	**2622**
				N560	68.1	2379	**77.1**	**2733**
250	SBT	Sierra	3.339	N160	60.9	2299	**68.2**	**2541**
				N560	61.6	2300	**70.5**	**2599**
				N165	65.6	2329	**74.5**	**2613**
250	Grand Slam	Speer	3.299	N160	64.5	2300	**72.0**	**2561**
				N165	69.4	2357	**77.2**	**2604**
260	Forex	LAPUA	3.350*	N160	59.9	2260	**71.4**	**2635**
				N560	67.9	2346	**78.1**	**2703**
				N165	71.4	2398	**80,2**	**2674**
275	SP	Speer	3.346*	N165	67.1	2265	**74.4**	**2488**
300	HPBT	Sierra	3.339	N160	57.6	2076	**65.4**	**2321**
				N560	59.3	2107	**68.0**	**2357**

*) The SAAMI maximum cartridge overall length is exceeded.

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

.338 LAPUA Magnum

Test barrel: 27½", 1 in 10" twist
Primers: Large Rifle Magnum
Cases: LAPUA, trim-to length 2.714"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
200	SP	Hornady	3.583	N160	85.1	2882	**94.7**	**3211**
				N165	91.7	2904	**101.4**	**3248**
225	SP	Hornady	3.583	N160	74.3	2619	**89.3**	**3015**
				N560	81.3	2800	**92.6**	**3124**
				N165	79.0	2642	**95.4**	**3065**
				N170	87.4	2744	**100.0**	**3070**
250	Scenar	LAPUA	3.681	N560	71.1	2514	**85.0**	**2891**
				N165	72.3	2484	**85.9**	**2816**
				N170	85.1	2599	**97.1**	**2911**
250	Lock Base	Lapua	3.602	N560	76.8	2627	**88.0**	**2941**
				N165	73.2	2520	**89.2**	**2871**
				N170	78.4	2539	**93.8**	**2878**
260	Forex	LAPUA	3.583	N560	74.7	2534	**86.2**	**2907**
				N165	74.6	2531	**85.9**	**2897**
				N170	84.8	2603	**96.4**	**2939**
300	HPBT	Sierra	3.602	N165	66.2	2175	**82.8**	**2575**
				N560	67.8	2254	**85.6**	**2693**
				N170	74.4	2251	**93.3**	**2663**
				24N41	79.9	2302	**97.7**	**2671**

.358 Norma Magnum

Test barrel: 24", 1 in 12" twist
Primers: Large Rifle Magnum
Cases: Norma, trim-to length 2.512"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
250	SP	Norma	3.228	N160	**80.2**	**2790**

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

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

9.3 x 62

Test barrel: 24", 1 in14" twist
Primers: Large Rifle
Cases: LAPUA, trim-to length 2.433"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
258	HMK	RWS	3.216	N135			**57.6**	**2510**
270	Forex	LAPUA	3.173	N135	45.4	1932	**54.3**	**2297**
				N140	46.0	2024	**55.7**	**2329**
				N150	52.5	2096	**60.4**	**2395**
285	TMR	RWS	3.232	N135			**54.5**	**2330**

9.3 x 64

Test barrel: 25½", 1 in 14" twist
Primers: Large Rifle
Cases: RWS, trim-to length 2.512"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
258	HMK	RWS	3.366	N140	**67.9**	**2670**
285	TMR	RWS	3.326	N140	**67.0**	**2530**
293	TUG	RWS	3.366	N160	**75.9**	**2550**

.375 H&H Magnum

Test barrel: 24", 1 in 12" twist
Primers: Large Rifle Magnum
Cases: Remington, trim-to length 2.842"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
235	Spitzer	Speer	3.582	N140	**76.4**	**2890**
				N160	**86.7**	**2900**
270	RN	Hornady	3.602*	N140	**73.3**	**2760**
				N160	**84.1**	**2790**
300	RN	Hornady	3.563	N140	**69.6**	**2530**
				N160	**81.8**	**2560**

*) The SAAMI maximum cartridge overall length is exceeded.

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.444 Marlin

Test barrel: 22", 1 in 38" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.216"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
200	HP/XTP	Hornady	2.535	N110	41.1	2381	**45.0**	**2531**
				N120	50.2	2551	**55.4**	**2754**
240	JTC-SIL	Hornady	2.539	N120	45.4	2261	**50.3**	**2455**
				N130	50.7	2315	**54.4**	**2468**
265	FP	Hornady	2.559	N120	43.5	2129	**48.1**	**2320**
				N130	46.8	2117	**51.3**	**2320**

.45-70 Government

Test barrel: 22", 1 in 20" twist
Primers: Large Rifle
Cases: Remington, trim-to length 2.098"

WARNING: These loads are to be used only in modern lever and bolt action rifles maufactured to meet CIP/SAAMI recommendations. They must NOT be used in old rifles with weaker actions like Trapdoor and Marlin mod. 1895. The listed maximum loads do not exceed 28100 psi.

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
300	HP	Hornady	2.539	N120	40.6	1864	**45.0**	**2029**
				N130	48.8	1947	**52.1**	**2090**
				N133	58.7	2048	**63.2**	**2242**
300	HP	Sierra	2.524	N120	38.9	1832	**46.5**	**2047**
				N133	57.6	2057	**60.0**	**2187**
				N135	58.6	1982	**61.7**	**2134**
400	SP	Speer	2.547	N120	31.7	1455	**35.8**	**1604**
				N133	46.6	1695	**51.4**	**1854**
				N135	46.6	1609	**51.6**	**1783**

.458 Winchester Magnum

Test barrel: 25", 1 in 14" twist
Primers: Large Rifle Magnum
Cases: Remington, trim-to length 2.492"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
300	HP	Sierra	2.933	N120	64.7	2427	**70.0**	**2599**
350	SP	Speer	3.091	N120	63.5	2288	**69.1**	**2462**
				N130	69.0	2373	**73.7**	**2518**
500	RN	Hornady	3.327	N135	65.5	1930	**70.4**	**2060**
	AGS	Speer	3.327	N135	67.5	1920	**72.5**	**2053**
	RN	Hornady	3.327	N140	70.1	1983	**74.5**	**2100**

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.50 BMG

Test barrel: 45", 1 in 16½" twist
Primers: CCI 35
Cases: TZZ, trim-to length 3.902"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
647	FMJBT	Speer	5.413	N170	197.0	2584	**220.0**	**2844**
				24N41	211.8	2654	**223.3**	**2848**
				20N29	237.2	2702	**251.5**	**2942**
700	Solid		5.413	24N41	208.1	2611	**225.5**	**2836**
				20N29	232.5	2642	**250.2**	**2894**
750	A-MAX	Hornady	5.413	N170	186.1	2450	**208.3**	**2683**
				24N41	197.5	2468	**212.8**	**2692**
				20N29	221.9	2516	**240.2**	**2749**
750	Solid		5.413	24N41	201.6	2473	**218.7**	**2728**
				20N29	222.2	2521	**243.5**	**2773**
800	Solid		5.413	24N41	179.4	2334	**193.4**	**2529**
				20N29	215.1	2521	**237.4**	**2722**
850	Solid		5.413	24N41	187.7	2314	**203.2**	**2508**
				20N29	211.1	2407	**231.2**	**2638**

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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

Notes

HANDGUN RELOADING DATA

DISCLAIMER

I. All of this reloading information has been provided by Nexplo Vihtavuori Oy and Nammo Lapua Oy. The data given here were obtained in laboratory conditions following strictly the CIP (Commission International Permanente) June 13, 1990 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.

II. IT IS A MUST FOR EVERY RELOADER TO READ THE RELOADING SAFETY RULES ON THE PAGES 9-10 OF THIS GUIDE.

7mm TCU

Test barrel: 14", 1 in 10" twist
Primers: Small Rifle
Cases: Fireformed LAPUA .223 Remington, trim-to length 1.752"

NOTE: This caliber is not supported by CIP or SAAMI. The listed maximum loads do not exceed 46500 psi.

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Hornady	2.461	N120	22.8	2188	**25.3**	**2441**
				N130	25.0	2205	**27.7**	**2469**
				N133	27.3	2281	**30.2**	**2540**
120	SSSP	Hornady	2.500	N120	20.4	1988	**22.4**	**2150**
				N130	22.4	2000	**24.9**	**2209**
				N133	25.0	2066	**27.9**	**2300**
130	Spitzer	Speer	2.559	N120	19.1	1779	**21.3**	**1957**
				N130	21.6	1879	**23.9**	**2055**
				N133	22.5	1888	**25.0**	**2078**
150	SBT	Sierra	2.559	N120	18.0	1684	**20.0**	**1844**
				N130	20.2	1756	**22.4**	**1922**
				N133	21.2	1778	**23.6**	**1964**
				N135	22.2	1765	**24.8**	**1960**
160	SBT	Sierra	2.598	N120	17.3	1576	**19.3**	**1742**
				N130	19.5	1656	**21.7**	**1831**
				N133	20.2	1675	**22.4**	**1832**
				N135	22.4	1741	**24.9**	**1911**
				N540	22.9	1786	**25.2**	**1961**

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7mm BR Remington

Test barrel: 14½", 1 in 10" twist,
Primers: Small Rifle
Cases: Remington, trim-to length 1.512"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Hornady	2.205	N120	26.8	2418	**29.8**	**2721**
				N130	29.2	2449	**32.4**	**2748**
120	SSSP	Hornady	2.228	N120	24.9	2171	**27.8**	**2421**
				N130	26.8	2191	**29.9**	**2454**
				N133	29.4	2298	**32.6**	**2529**
140	Ballistic Tip	Nosler	2.374	N120	22.1	1928	**24.4**	**2100**
				N130	24.1	1953	**26.7**	**2167**
				N133	25.6	1993	**28.4**	**2202**
150	Ballistic Tip	Nosler	2.374	N120	21.8	1887	**23.8**	**2032**
				N130	23.3	1893	**25.3**	**2083**
				N133	24.7	1926	**27.3**	**2107**
				N135	26.0	1916	**28.8**	**2132**
160	HPBT	Sierra	2.350	N120	19.9	1758	**21.9**	**1904**
				N130	21.6	1812	**23.9**	**1975**
				N133	23.5	1838	**26.1**	**2030**
				N135	24.8	1862	**27.7**	**2066**

7 x 49 GJW

Test barrel: 15", 1 in 8" twist
Primers: Small Rifle
Cases: MFT, trim-to length 1.920"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
150	Ballistic Tip	Nosler	2.953	N130	23.4	1942	**25.7**	**2108**
				N133	24.6	1940	**26.9**	**2115**
				N135	26.6	1995	**28.7**	**2158**
168	HPBT	Sierra	2.953	N130	22.7	1843	**25.1**	**2005**
				N133	24.1	1854	**26.5**	**2025**
				N135	26.3	1919	**28.2**	**2070**
				N140	27.3	1918	**29.5**	**2087**

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

Test barrel: 7", 1 in 18½" twist
Primers: Small Pistol
Cases: Remington, trim-to length .913"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
83	LWC	LAPUA	.969	N310	1.5	767	**1.7**	**856**
98	LWC	LAPUA	.969	N310	1.1	618	**1.3**	**691**
98	LRN	LAPUA	1.272	N310	1.9	848	**2.2**	**916**

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.32 S.&W. Long Wadcutter

Test barrel: 7", 1 in 18½" twist
Primers: Small Pistol
Cases: Remington, trim-to length .913"

NOTE: The listed maximum load safe to use only with LAPUA headstamped cartridge cases!

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
83	LWC	LAPUA	.969	N310	1.7	755	**1.7**	**919**
98	LWC	LAPUA	.969	N310	1.5	755	**1.8**	**853**

.380 ACP

Test barrel: 3½", 1 in 10" twist
Primers: Small Pistol
Cases: Sako, trim-to length .677"

Bullet				Powder	Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	**Weight [grs]**	**Velocity [fps]**
90	HP-XTP	Hornady	.980	N310	**2.9**	**1010**
				N320	**3.6**	**1073**
95	TMJ	Speer	.980	N310	**3.0**	**994**
				N320	**3.7**	**1066**
100	FMJ	Hornady	.980	N310	**2.6**	**912**
				N320	**3.4**	**1007**

9mm Luger

Test barrel: 4", 1 in 10" twist
Primers: Small Pistol
Cases: Remington, trim-to length .748"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
90	HP-XTP	Hornady	1.063	N310	4.0	1224	**4.3**	**1272**
				N320	4.9	1332	**5.4**	**1397**
				N330	5.6	1394	**6.2**	**1455**
				N340	5.7	1411	**6.4**	**1508**
				N350	6.6	1417	**7.4**	**1522**
				3N37	6.6	1453	**7.4**	**1532**
100	HP	Speer	1.083	N320	4.8	1243	**5.3**	**1328**
				N330	5.5	1309	**6.0**	**1384**
				N340	5.9	1319	**6.6**	**1436**
				3N37	6.7	1335	**7.5**	**1452**

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9mm Luger (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
115	HP-XTP	Hornady	1.142	N320	4.1	1135	**4.6**	**1206**
				N330	5.0	1188	**5.5**	**1272**
				N340	5.5	1224	**6.1**	**1327**
				3N37	6.2	1237	**6.9**	**1328**
				N350	6.0	1243	**6.6**	**1318**
115	RN	Rainier	1.142	N320	4.1	1086	**4.5**	**1157**
				N330	4.7	1138	**5.2**	**1201**
				N340	5.1	1175	**5.6**	**1245**
				N350	5.8	1217	**6.5**	**1304**
				3N37	6.2	1211	**6.6**	**1271**
120	CEPP	LAPUA	1.130	N320	4.0	1030	**4.4**	**1103**
				N330	4.8	1132	**5.3**	**1207**
				N340	5.1	1155	**5.7**	**1234**
				N350	6.0	1194	**6.5**	**1277**
				3N37	5.7	1132	**6.2**	**1209**
124	LSWC	Intercast	1.142	N320	3.8	1086	**4.2**	**1138**
				N330	4.5	1142	**4.9**	**1186**
				N340	4.8	1155	**5.3**	**1230**
				3N37	5.5	1171	**6.0**	**1234**
				N350	5.1	1148	**5.6**	**1205**
124	FMJ/FP	Hornady	1.142	N320	4.0	1037	**4.4**	**1115**
				N330	5.0	1125	**5.3**	**1196**
				N340	5.3	1158	**5.8**	**1233**
				3N37	6.1	1188	**6.6**	**1252**
				N350	5.6	1161	**6.1**	**1232**
				3N38	6.5	1105	**7.6**	**1237**
124	RN	Rainier	1.142	N320	3.8	1017	**4.2**	**1086**
				N330	4.4	1079	**4.8**	**1146**
				N340	4.7	1096	**5.3**	**1171**
				N350	5.5	1135	**6.1**	**1216**
				3N37	5.5	1152	**6.1**	**1214**
130	FMJ	Sierra	1.142	N320	3.7	997	**4.1**	**1062**
				N330	4.2	1047	**4.6**	**1109**
				N340	4.4	1079	**4.9**	**1132**
				N350	5.2	1096	**5.6**	**1148**
				3N37	5.1	1083	**5.7**	**1145**
				3N38	6.0	1017	**6.8**	**1165**
				N105	7.2	1171	**7.5**	**1252**
145	LRN	Intercast	1.142	N330	3.5	951	**3.9**	**1016**
				N340	4.0	997	**4.4**	**1060**
				N350	4.3	991	**4.8**	**1066**
				3N37	4.6	1001	**5.1**	**1073**

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9mm Luger (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
147	HP/XTP	Hornady	1.142	N330	4.1	981	**4.4**	**1050**
				N340	4.1	965	**4.4**	**1031**
				3N37	4.8	997	**5.3**	**1070**
				N350	4.7	1010	**5.1**	**1089**
				3N38	6.0	994	**6.2**	**1096**
				N105	6.2	1056	**6.5**	**1125**
147	RN	Rainier	1.142	N330	3.6	906	**3.9**	**954**
				N340	3.9	909	**4.2**	**977**
				N350	4.3	955	**4.8**	**1033**
				3N37	4.6	955	**5.0**	**1025**
150	CEPP	LAPUA	1.130	N330	3.5	883	**3.8**	**945**
				N340	3.9	919	**4.2**	**981**
				N350	4.4	951	**4.7**	**1012**
				3N37	4.4	922	**4.8**	**995**

9 x 21

Test barrel: 5½", 1 in 10" twist
Primers: Small Pistol
Cases: Tanfoglio, trim-to length .826"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
100	HP	Speer	1.142	N340	6.0	1375	**6.6**	**1467**
				3N37	6.8	1411	**7.5**	**1496**
				N350	7.0	1430	**7.7**	**1516**
115	FMJ	Sierra	1.161	N340	5.4	1257	**5.9**	**1322**
				3N37	6.0	1240	**6.6**	**1330**
				N350	6.1	1283	**6.6**	**1355**
				N105	8.2	1355	**8.8**	**1447**
123	FMJ	LAPUA	1.161	N340	4.8	1148	**5.3**	**1201**
				3N37	5.4	1168	**6.0**	**1229**
				N350	5.5	1152	**5.9**	**1222**
				N105	6.9	1230	**7.5**	**1311**
147	HP-XTP	Hornady	1.161	3N37	4.9	1024	**5.3**	**1087**
				N350	4.6	1070	**5.0**	**1115**
				N105	5.9	1079	**6.4**	**1147**

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.357 SIG

Test barrel: 5", 1 in 16" twist
Primers: Small Pistol
Cases: Starline, trim-to length .860"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
95	FMJ	Speer	1.122	N340	8.1	1578	**9.2**	**1714**
				3N37	9.2	1611	**10.3**	**1751**
				N350	9.3	1614	**10.5**	**1767**
115	FMJ	Sierra	1.122	N340	6.9	1387	**8.0**	**1528**
				3N37	7.8	1424	**8.9**	**1556**
				N350	7.7	1413	**9.0**	**1569**
123	FMJ	LAPUA	1.122	N340	6.5	1305	**7.6**	**1446**
				3N37	7.5	1342	**8.6**	**1480**
				N350	7.5	1348	**8.7**	**1490**
123	Mega-shock	LAPUA	1.122	N340	6.5	1307	**7.7**	**1387**
				3N37	7.5	1347	**8.6**	**1486**
				N350	7.4	1341	**8.8**	**1502**
130	RN B	Rainier	1.122	N340	6.5	1262	**7.4**	**1387**
				3N37	7.5	1283	**8.4**	**1360**
				N350	7.3	1317	**8.5**	**1454**

.38 Super Auto

Test barrel: 5½", 1 in 16" twist
Primers: Small Pistol
Cases: Remington +P, trim-to length .893"

NOTE: The listed maximum loads are SAAMI +P loads!

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
115	HP-XTP	Hornady	1.240	N320	5.1	1188	**5.9**	**1319**
				N340	6.0	1250	**6.9**	**1398**
				3N37	6.5	1263	**7.9**	**1430**
				N350	5.5	1171	**7.1**	**1362**
115	FMJ	Sierra	1.276	N350	7.9	1358	**9.1**	**1519**
				3N37	7.5	1296	**8.4**	**1453**
115	RN	Rainier	1.240	N320	4.8	1171	**5.7**	**1293**
				N340	6.0	1253	**7.0**	**1398**
				N350	6.6	1273	**7.9**	**1437**
				3N37	6.9	1280	**7.9**	**1417**
124	FMJ-FP	Hornady	1.260	N340	6.0	1207	**7.1**	**1355**
				3N37	7.1	1227	**7.7**	**1316**
				N350	6.4	1201	**7.5**	**1348**
				3N38	8.0	1273	**9.3**	**1463**
				N105	10.0	1407	**10.9**	**1594**

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

.38 Super Auto (cont'd)

NOTE: The listed maximum loads are SAAMI +P loads!

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
124	LSWC	Intercast	1.260	N340	5.4	1204	**6.4**	**1329**
				N350	6.0	1217	**7.1**	**1362**
				3N37	6.3	1237	**7.4**	**1368**
130	FMJ	Sierra	1.260	N340	5.5	1145	**6.3**	**1260**
				3N37	6.3	1181	**7.3**	**1309**
				3N38	8.3	1270	**9.0**	**1391**
				N105	9.3	1319	**10.1**	**1457**
130	RN	Rainier	1.260	N340	5.4	1129	**6.2**	**1230**
				N350	5.9	1138	**6.9**	**1273**
				3N37	6.3	1165	**7.2**	**1286**
145	LRN	Intercast	1.260	N340	4.3	1033	**5.2**	**1148**
				3N37	5.5	1079	**6.3**	**1207**
				N350	5.1	1047	**6.0**	**1175**
147	HP/XTP	Hornady	1.260	N340	5.1	1033	**5.9**	**1161**
				3N37	5.9	1096	**6.8**	**1220**
				N350	5.7	1073	**6.5**	**1194**
				3N38	7.7	1201	**8.0**	**1224**
				N105	7.8	1181	**8.4**	**1293**
147	RN	Rainier	1.260	N340	5.0	1053	**5.7**	**1142**
				N350	5.3	1007	**6.1**	**1132**
				3N37	5.5	1037	**6.3**	**1145**

.38 Special

Test barrel: 6½", 1 in 18" twist
Primers: Small Pistol
Cases: Sako, trim-to length 1.145"

NOTE: The listed maximum loads are SAAMI +P loads!

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
110	HP/XTP	Hornady	1.437	N320	5.7	1188	**5.9**	**1230**
				N340	6.5	1191	**6.7**	**1229**
				3N37	7.7	1224	**8.0**	**1266**
				N350	7.1	1227	**7.4**	**1266**
124	LSWC	Intercast	1.437	N320	4.8	1079	**5.0**	**1119**
				N340	6.0	1125	**6.2**	**1164**
				3N37	6.6	1135	**6.8**	**1170**
				N350	6.4	1152	**6.6**	**1183**

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

.38 Special (cont'd)

NOTE: The listed maximum loads are SAAMI +P loads!

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
125	FP/XTP	Hornady	1.437	N320	5.3	1043	**5.4**	**1082**
				N340	6.2	1102	**6.4**	**1140**
				3N37	7.2	1115	**7.3**	**1160**
				N350	7.0	1132	**7.2**	**1178**
125	FP	Rainier	1.437	N320	4.7	1017	**5.0**	**1053**
				N340	5.7	1066	**6.0**	**1106**
				N350	6.3	1070	**6.6**	**1115**
				3N37	6.6	1093	**6.9**	**1140**
140	HP	Speer	1.437	N320	5.0	955	**5.1**	**1003**
				N340	5.8	981	**6.1**	**1030**
				3N37	6.6	1010	**6.9**	**1064**
				N350	6.4	1004	**6.7**	**1053**
145	LSWC	Intercast	1.476	N320	4.1	938	**4.4**	**971**
				N340	5.3	1033	**5.6**	**1076**
				3N37	5.6	1001	**5.9**	**1039**
				N350	5.8	1043	**6.2**	**1089**
146	JHP	Speer	1.378	N340	5.0	922	**5.2**	**963**
				3N37	5.7	932	**5.9**	**975**
				N350	5.6	932	**5.7**	**971**
148	LWC	Sako	1.181	N320	3.2	820	**3.4**	**848**
				N330	3.6	840	**3.7**	**875**
				N340	3.9	863	**4.0**	**895**
				N350	4.3	892	**4.5**	**928**
158	HP	Speer	1.437	N320	4.2	794	**4.4**	**843**
				N340	5.2	876	**5.4**	**929**
				3N37	6.1	915	**6.4**	**957**
				N350	5.9	925	**6.1**	**969**
158	FP	Rainier	1.476	N320	4.3	843	**4.6**	**885**
				N340	5.3	879	**5.5**	**923**
				N350	5.9	922	**6.1**	**963**
				3N37	6.1	925	**6.3**	**970**
160	LFN	Intercast	1.476	N340	5.4	1033	**5.6**	**1070**
				3N37	5.7	978	**6.0**	**1021**
				N350	5.7	1014	**5.9**	**1046**
180	TERA	LAPUA	1.476	N110	8.4	863	**8.6**	**904**

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

.357 Magnum

Test barrel: 7", 1 in 18½" twist
Primers: Small Rifle
Cases: Remington, trim-to length 1.283"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
110	HP/XTP	Hornady	1.575	N310	6.2	1296	**6.7**	**1367**
				N320	7.4	1390	**8.0**	**1474**
				N340	8.5	1458	**9.4**	**1579**
				3N37	9.5	1535	**10.7**	**1646**
				N350	9.9	1547	**10.8**	**1647**
				N110	18.5	1716	**20.1**	**1909**
123	LSWC	Intercast	1.614*)	N340	7.9	1375	**8.8**	**1469**
				N350	8.3	1387	**9.3**	**1479**
				N110	15.7	1546	**17.4**	**1699**
125	FP/XTP	Hornady	1.575	N310	5.5	1134	**6.1**	**1234**
				N320	6.2	1229	**7.1**	**1329**
				N340	7.8	1352	**8.8**	**1462**
				N350	8.7	1415	**9.7**	**1512**
				N110	16.8	1601	**18.4**	**1772**
140	HP	Speer	1.575	N340	7.6	1251	**8.3**	**1340**
				3N37	8.3	1278	**9.3**	**1386**
				N350	8.2	1280	**9.1**	**1382**
				N110	15.7	1499	**17.1**	**1647**
145	LSWC	Intercast	1.614*)	N320	5.8	1175	**6.4**	**1245**
				N340	6.6	1238	**7.4**	**1319**
				3N37	7.5	1269	**8.5**	**1368**
				N350	6.8	1231	**8.1**	**1344**
				N110	14.0	1475	**15.3**	**1591**
158	HP	Speer	1.575	N320	5.7	1023	**6.3**	**1114**
				N340	6.7	1117	**7.4**	**1198**
				3N37	7.4	1152	**8.3**	**1254**
				N350	7.6	1200	**8.5**	**1276**
158	FP/XTP	Hornady	1.575	N105	10.9	1320	**11.9**	**1417**
158	HP	Speer	1.575	N110	14.1	1368	**15.3**	**1502**
160	LFN	Intercast	1.575	N340	6.3	1181	**7.1**	**1244**
				3N37	7.3	1176	**8.0**	**1273**
				N350	6.6	1191	**7.6**	**1270**
				N110	13.2	1404	**14.4**	**1514**
180	TERA	LAPUA	1.677*)	N340	5.8	927	**6.4**	**988**
				3N37	6.2	921	**7.1**	**1028**
				N350	6.0	897	**7.0**	**1017**
				N110	11.9	1182	**12.8**	**1303**

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

.357 Magnum (cont'd)

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
180	TMJ	Speer	1.677*)	N340	6.3	972	**7.1**	**1069**
				3N37	7.0	1013	**7.9**	**1120**
				N350	6.4	961	**7.4**	**1087**
				N105	8.9	1154	**10.3**	**1261**
				N110	12.7	1253	**14.0**	**1394**
200	TMJ	Speer	1.697*)	3N37	6.4	891	**7.2**	**991**
				N350	6.2	838	**7.1**	**966**
				N105	8.4	1020	**9.4**	**1123**
				N110	11.4	1107	**12.4**	**1204**

*) The CIP maximum cartridge overall length is exceeded.

.357 Remington Maximum

Test barrel: 12", 1 in 18½" twist
Primers: Small Rifle
Cases: Remington, trim-to length 1.598"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
158	FP/XTP	Hornady	1.890	3N37	10.1	1440	**11.3**	**1560**
				N350	8.6	1341	**10.7**	**1528**
				N110	17.5	1737	**19.4**	**1888**
158	FP	Rainier	1.890	N350	9.7	1309	**11.8**	**1533**
				3N37	9.5	1342	**11.4**	**1539**
				N110	18.6	1740	**20.2**	**1897**
160	LFN	Intercast	1.890	3N37	9.1	1455	**10.9**	**1572**
				N350	9.5	1445	**10.6**	**1547**
180	Silhoutte	Nosler	1.894	N110	15.5	1559	**17.2**	**1695**
				N120	20.4	1604	**22.4**	**1752**
200	TMJ	Speer	2.000*)	N110	14.2	1361	**16.0**	**1499**
				N120	18.9	1397	**20.8**	**1573**

*) The CIP maximum cartridge overall length is exceeded.

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

.40 S.&W.

Test barrel: 5½", 1 in 16" twist
Primers: Small Pistol
Cases: Remington, trim-to length .842"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
155	HP-XTP	Hornady	1.126	N320	5.2	1106	**5.9**	**1191**
				N330	6.0	1142	**6.7**	**1234**
				N340	6.0	1132	**6.9**	**1250**
				3N37	7.3	1171	**8.1**	**1286**
				N350	6.6	1152	**7.6**	**1263**
155	FP	Rainier	1.126	N320	5.3	1086	**5.9**	**1171**
				N330	6.0	1129	**6.7**	**1224**
				N340	6.4	1155	**7.3**	**1276**
				N350	7.2	1171	**8.1**	**1296**
				3N37	7.5	1178	**8.5**	**1293**
170	HP	Hornady	1.126	N340	5.3	1027	**6.1**	**1135**
				3N37	6.0	1056	**7.0**	**1165**
				N350	5.8	1056	**6.8**	**1161**
180	HP	Speer	1.126	N340	5.5	1001	**6.1**	**1109**
				3N37	5.8	994	**6.8**	**1115**
				N350	5.9	1047	**6.7**	**1142**
200	TMJ	Speer	1.126	N340	4.7	876	**5.4**	**978**
				3N37	5.1	869	**6.0**	**988**
				N350	5.3	892	**6.0**	**991**
				N105	7.5	1053	**8.0**	**1132**

10mm AUTO

Test barrel: 5½", 1 in 16" twist
Primers: Large Pistol
Cases: Remington, trim-to length .988"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
155	HP-XTP	Hornady	1.256	N340	6.7	1165	**7.6**	**1286**
				3N37	7.2	1178	**8.6**	**1316**
				N350	7.1	1178	**8.4**	**1316**
155	FP	Rainier	1.256	N340	7.2	1211	**8.0**	**1322**
				N350	8.0	1243	**8.9**	**1378**
				3N37	8.2	1224	**9.0**	**1345**
180	HP	Speer	1.256	N340	6.0	1024	**6.9**	**1155**
				3N37	6.6	1093	**7.8**	**1201**
				N350	5.9	1076	**7.2**	**1184**
200	FMJ/FP	Hornady	1.256	N340	5.0	876	**5.7**	**1014**
				3N37	5.9	955	**6.8**	**1073**
				N350	5.3	932	**6.3**	**1047**
				N105	7.7	1066	**8.6**	**1155**

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

.41 Remington Magnum

Test barrel: 6", 1 in 18¾" twist
Primers: Large Pistol
Cases: W-W Super, trim-to length 1.285"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
170	JHC	Sierra	1.579	N350	11.1	1368	**13.0**	**1526**
				N105	15.3	1539	**17.5**	**1690**
				N110	21.7	1654	**23.5**	**1795**
210	HP/XTP	Hornady	1.579	N350	10.4	1221	**11.8**	**1339**
				N105	13.0	1329	**15.1**	**1470**
				N110	18.5	1431	**20.3**	**1562**

.44 S.&W. Special

Test barrel: 6", 1 in 18" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.153"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
180	HP-XTP	Hornady	1.469	N320	6.8	935	**7.5**	**1033**
				N330	7.7	1010	**8.6**	**1109**
				N340	8.8	1047	**9.5**	**1145**
				N350	9.9	1043	**10.5**	**1148**
200	HP-XTP	Hornady	1.469	N320	6.4	886	**7.0**	**965**
				N330	7.7	942	**8.5**	**1033**
				N340	8.3	961	**9.1**	**1066**
				N350	9.1	971	**9.9**	**1079**
220	FPJ-Match	Sierra	1.469	N320	5.2	725	**5.9**	**837**
				N330	6.2	761	**7.0**	**889**
				N340	6.6	814	**7.4**	**912**
				N350	7.7	833	**8.6**	**948**
240	JTC-Sil	Hornady	1.480	N320	4.9	633	**5.6**	**732**
				N330	5.5	676	**6.2**	**768**
				N340	6.3	728	**7.1**	**827**
				N350	7.5	784	**8.2**	**889**
250	FPJ-Match	Sierra	1.469	N320	4.7	633	**5.5**	**741**
				N330	5.0	627	**6.0**	**748**
				N340	5.5	646	**6.5**	**778**
				N350	6.7	751	**7.6**	**853**
267	LFN	Intercast	1.539	N320	5.3	794	**6.0**	**860**
				N330	6.3	856	**7.0**	**922**
				N340	6.5	840	**7.1**	**912**
				N350	7.3	850	**8.0**	**925**

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

.44 Remington Magnum

Test barrel: 7", 1 in 20" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.275"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
180	HP-XTP	Hornady	1.602	N320	10.2	1300	**11.7**	**1424**
				N340	12.5	1401	**14.0**	**1539**
				N350	13.2	1430	**15.2**	**1568**
				N110	24.7	1585	**26.2**	**1686**
200	HP-XTP	Hornady	1.602	N320	9.6	1218	**11.2**	**1331**
				N340	11.3	1313	**12.9**	**1426**
				3N37	13.2	1386	**15.0**	**1506**
				N350	12.1	1320	**14.5**	**1476**
				N105	15.9	1456	**19.2**	**1630**
				N110	23.7	1577	**26.2**	**1729**
220	FPJ-Match	Sierra	1.602	N320	8.6	1118	**10.3**	**1224**
				N340	10.7	1222	**12.2**	**1321**
				N350	12.1	1274	**14.6**	**1430**
240	JTC-Sil	Hornady	1.602	N320	8.7	1059	**9.7**	**1154**
				N340	9.9	1148	**11.4**	**1240**
				3N37	11.6	1185	**13.2**	**1309**
				N350	11.6	1202	**12.7**	**1301**
				N105	13.9	1286	**16.4**	**1424**
				N110	19.8	1386	**21.9**	**1531**
250	FPJ-Match	Sierra	1.602	N320	8.1	994	**9.6**	**1121**
				N340	9.6	1084	**11.1**	**1205**
				N350	11.0	1166	**13.0**	**1287**
267	LFN	Intercast	1.681*)	N340	10.1	1149	**11.4**	**1227**
				3N37	11.4	1166	**13.1**	**1276**
				N350	10.9	1152	**12.6**	**1254**
				N110	19.8	1351	**21.7**	**1468**
300	HP-XTP	Hornady	1.717*)	N340	9.2	974	**10.4**	**1055**
				N350	10.1	999	**11.6**	**1119**
				N110	18.1	1218	**20.1**	**1363**
300	JSP	Sierra	1.717*)	N340	9.1	944	**10.1**	**1039**
				3N37	9.6	968	**11.1**	**1081**
				N350	9.4	935	**10.9**	**1062**
				N105	12.2	1091	**13.7**	**1200**
				N110	17.3	1176	**18.9**	**1296**

*) The CIP maximum cartridge overall length is exceeded.

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LOADS LESS THAN MINIMUM CHARGES SHOWN ARE NOT RECOMMENDED

.45 AUTO

Test barrel: 6", 1 in 16" twist
Primers: Large Pistol
Cases: Remington, trim-to length .893"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
154	LSWC	Intercast	1.240	N320	5.9	1050	**6.5**	**1134**
				N340	7.7	1145	**8.3**	**1227**
180	LSWC	Intercast	1.244	N320	5.5	988	**6.1**	**1070**
				N340	6.9	1037	**7.5**	**1121**
185	TMJ-SWC	Speer	1.268	N320	5.7	929	**6.2**	**1003**
				N340	7.2	1010	**7.8**	**1100**
200	LSWC	Intercast	1.240	N320	4.8	902	**5.2**	**973**
				N340	6.2	981	**6.7**	**1054**
200	FMJ-CT	Hornady	1.240	N320	5.0	869	**5.5**	**942**
				N340	6.3	922	**6.9**	**1002**
				N350	6.8	932	**7.5**	**1011**
230	FMJ-RN	Hornady	1.260	N320	4.9	797	**5.3**	**863**
				N340	6.0	846	**6.5**	**928**
				N350	6.8	860	**7.3**	**935**

.45 Colt

Test barrel: 6", 1 in 16" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.279"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
180	LSWC	Intercast	1.594	N320	8.2	1085	**9.0**	**1170**
				N330	9.9	1152	**10.6**	**1241**
				N340	10.3	1150	**11.1**	**1245**
				N350	11.1	1144	**12.3**	**1262**
185	HP/XTP	Hornady	1.594	N320	8.5	1062	**9.3**	**1147**
200	FMJ-CT	Hornady	1.594	N320	7.7	1007	**8.6**	**1089**
200	LSWC	Hornady	1.594	N320	8.3	1042	**9.1**	**1111**
				N340	10.5	1089	**11.3**	**1164**
230	FMJ-Match	Sierra	1.594	N320	7.3	912	**8.0**	**978**
				N340	9.4	949	**10.2**	**1045**
250	HP-XTP	Hornady	1.594	N320	7.0	813	**7.6**	**888**
				N340	9.0	888	**9.6**	**973**
				N350	10.5	943	**10.9**	**1022**

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.45 Winchester Magnum

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

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
185	HP/XTP	Hornady	1.516	3N37	15.0	1706	**16.8**	**1795**
200	TMJ-SWC	Speer	1.516	3N37	14.6	1640	**16.0**	**1726**
200	FMJ-CT	Hornady	1.555	N105	17.7	1663	**20.2**	**1824**
200	TMJ-SWC	Speer	1.516	N110	24.1	1808	**26.3**	**1962**
230	FMJ-RN	Hornady	1.555	3N37	13.4	1411	**14.9**	**1545**
				N110	22.8	1683	**25.0**	**1804**
250	HP-XTP	Hornady	1.504	3N37	11.9	1211	**13.8**	**1427**
				N110	19.8	1512	**22.4**	**1640**

.454 Casull

Test barrel: 7½", 1 in 24" twist
Primers: Small Rifle
Cases: Starline, trim-to length 1.380"

NOTE: This caliber is not supported by CIP or SAAMI. The listed maximum loads do not exceed 50750 psi.

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
185	HP/XTP	Hornady	1.642*	3N37	17.6	1752	**21.0**	**1962**
				N350	18.2	1772	**21.4**	**1959**
				N105	26.6	2001	**29.3**	**2159**
225	JHP	Speer	1.681	3N37	16.8	1558	**19.6**	**1719**
				N105	24.6	1765	**26.7**	**1913**
				N110	30.8	1864	**33.5**	**2005**
250	HP/XTP	Hornady	1.685	3N37	15.6	1437	**18.2**	**1601**
				N105	21.4	1585	**24.3**	**1765**
				N110	28.1	1719	**30.7**	**1873**
300	UCHP	Speer	1.752	3N37	15.2	1296	**17.0**	**1414**
				N105	19.7	1408	**23.0**	**1588**
				N110	26.3	1555	**28.7**	**1686**

*) The bullet crimp is over the ogive.

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.50 AE

Test barrel: 6", 1 in 19" twist
Primers: Large Pistol
Cases: Speer, trim-to length 1.275"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
300	JHP	IMI	40.0	N105	19.5	1296	**21.3**	**1434**
				N110	25.3	1299	**28.6**	**1499**
				N120	32.5	1188	**36.0**	**1368**
325	UCHP	Speer	40.0	N105	17.7	1168	**19.5**	**1335**
				N110	24.1	1270	**27.0**	**1460**
				N120	30.7	1139	**34.5**	**1339**

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 1000 fps, or by the maximum pressure limit according to the SAAMI March 9, 1993 (Z299.3-1993). The bold text in the tables indicate the maximum load according to SAAMI 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 individual revolver used.

There are some special features, which must be considered, when using reduced loads like the ones presented in the tables bellow. 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 peeks involved in detonation can destroy the weapon and may lead to serious injury.

All these loads given here are extensively pressure tested and no sings 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: 5", 1 in 18" twist
Primers: Small Pistol
Cases: Remington, trim-to length 1.145"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
158	LSWC/HP		1.437	3NSL	2.8	726	**3.3**	**807**
				N320	3.3	754	**3.8**	**840**
				3NSM	3.6	787	**4.1**	**884**

.357 Magnum

Test barrel: 6", 1 in 18½" twist
Primers: Small Rifle
Cases: Remington, trim-to length 1.283"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
158	LSWC/HP		1.575	3NSM	3.9	791	**5.0**	998
				N340	4.5	804	**5.9**	1049
				3NSH	4.8	840	**5.9**	1053

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.44 S.&W. Special

Test barrel: 6½", 1 in 18" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.153"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
240	SWC/HP		1.539	3NSL	4.4	722	**5.3**	**832**
				N320	4.7	701	**5.9**	**852**
				3NSM	5.5	750	**6.3**	**885**
267	LFN		1.539	3NSL	3.6	641	**4.7**	**767**
				N320	3.8	633	**5.3**	**794**
				3NSM	4.9	708	**5.9**	**833**
				N340	6.6	857	**7.3**	**926**

.44 Remington Magnum

Test barrel: 7", 1 in 20" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.275"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
267	LFN		1.575	N340	5.9	734	**7.5**	**946**
				3NSH	6.4	796	**7.8**	**968**

.45 Colt

Test barrel: 6", 1 in 16" twist
Primers: Large Pistol
Cases: Remington, trim-to length 1.279"

Bullet				Powder	Starting Load		Maximum Load	
Weight [grs]	Type	Mfg.	C.O.L. [in.]	Type	Weight [grs]	Velocity [fps]	**Weight [grs]**	**Velocity [fps]**
200	RN		1.594	3NSL	6.3	850	**7.3**	**1008**
				N320	6.8	848	**8.7**	**1044**
				3NSM	8.0	877	**8.6**	**979**
250	RN		1.594	3NSL	5.1	744	**6.1**	**875**
				N320	5.6	751	**6.9**	**914**
				3NSM	6.3	780	**7.5**	**961**
				3NSH	8.2	870	**9.2**	**1004**

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Dear Customer,

Thank you for showing interest in **Vihtavuori Smokeless Powders**, the most clean burning, accurate, consistent reloading powder in the world.

We hope our reloading guide has been informative and useful to you. For more in depth information, we also offer a hard bound **Vihtavuori Reloading Manual, Second Edition**. Distribution of **Vihtavuori Powders** is from the manufacturer to the exclusive importer

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