

TARVAS

Reloading instructions 2017

Trumpeting Design

Deep wound channel
Outstanding stopping power
Minimal meat loss



Reloading instructions for Tarvas bullets 10.10.2017

Check that you have the latest version from: <http://www.redmoose.eu/reloading-lataus>

Trough out the development project of the bullet we have ensured excellent terminal ballistics = behaviour in the game and accuracy when shot with good quality gun. For this reason testing has included terminal ballistics in wet phone books as well as on the game and accuracy testing on the range with different loads. For the testing we have used high quality hunting guns so that results would represent what hunters are using in the field. Every Tarvas bullet has been measured before packing.

To ensure best possible result we recommend to follow general hand loading instructions, and safety rules and instructions given in this manual. The loads given in this manual are for Vihtavuori powders. Since the behaviour of Tarvas bullets is equal to for example Barnes and Naturalis copper bullets the loads are based on values given for these bullets in Vihtavuori reloading manual. Load data has been tested by shooting but not with a pressure gun. Based on the test results we may have slightly different values than on Vihtavuori manual. Although all loads are shown to be safe it is recommended to start loading from starting loads and follow the pressure signs and accuracy. Use max loads with caution. If overpressure signs are detected stop shooting and dismantle the remaining cartridges.

If you are using other powder make than Vihtavuori, refer to reloading manuals and use loads given to solid copper bullets like Barnes TSX, Nosler E-Tip or Lapua Naturalis with corresponding weight. Do not use maximum loads developed for thin jacketed lead core bullets. This is also mentioned for example in Nosler reloading manual for E-Tip bullets.

Best accuracy values are also given in some cases. However the best accuracy load is varying from gun to gun because of the barrel dynamics. For this reason try loads up or down from given best accuracy load if you wish to achieve the best possible accuracy. Since Tarvas has unique design which minimizes meat damage, you can use the whole speed potential of your cartridge. The recommended impact speed range is between 550 m/s – 850 m/s. However we have seen good results even with impact speeds over 900 m/s

Good reloading practices and reloading safety

Since individual hand loading practices, handling and storage of reloading components are beyond our control Red Moose Oy / Ltd disclaim any liability for possible damages which may result from the reloading or use of ammunition reloaded with these bullets

Reloading of cartridges is interesting hobby and allows you to shoot the best possible cartridges built with best components which will suit your gun and hunting

Every Tarvas bullet has been measured and checked before packing to ensure safe and accurate cartridges if loaded with care. All loads in this manual have shown to be safe. Since there is a great variance on guns it is advised to follow good reloading practices which reduce the risk of accidents due to guns or due to human mistake

1. Do not reload when intoxicated. If you are not in condition to drive you are not in condition to reload
2. Do not eat or drink while reloading. Wash your hands before eating
3. Clean all cases. It is difficult to detect possible damages on dirty cases
4. Check that all cases are free from damages, in good condition and same make. Powder volume may vary a lot between different makes which will have influence on chamber pressure and speed variation. If you end up using different makes weight all casings and use those which are as close same weight as possible.
5. Check case lengths and trim the cases according to instructions in this manual
6. Chamfer the inner edge of the casing so that it does not damage the bullet surface when seated. If you have trimmed cases chamfer also the outer edge if not done by the trimming machine
7. When sizing the cases check the case headspace so that you are not over sizing your cases. Instructions on page 4 - 5
8. After sizing clean the cases from sizing grease / oil before priming and charging
9. Check that the primers are according to the given instructions and all same make. Never use unknown primers or mix different makes. Mixing of primers will result to uneven bullet velocity or even dangerous chamber pressure. General recommendation is when LR primer is changed to LRM maximum load has to be reduced by 0.1 g (1.5 grain)
10. Check that powder make and burning rate is according to instructions
11. If you are using other make than Vihtavuori refer to the load instructions in corresponding reloading manual. Never use these values with other makes even if the powder burning rate according to burning rate tables would match with these powders. The specific weight and energy content between different makes may vary a lot and it can result dangerous chamber pressures
12. Never mix different powders. Keep the powder in the original package
13. Do not store the powder in hot and dry or humid places or open. Keep the powder in original package securely closed in room temperature preferably at +16 - +18°C and at relative humidity 55-60%
14. Take only the correct powder pack on the table so that you don't by mistake use incorrect powder
15. If you are not sure or suspect you have used incorrect powder dismantle all cartridges. Do not shoot!
16. Use good quality powder weight and check the calibration and zero before use. Check the powder charge several times before, in between and in the end of charging if you are using a dispenser.
17. Load in sequences. After charging check that all cases have equal level of powder. If not, the reason has to be clarified
18. When loading has been completed, empty the dispenser to correct powder pack. Never leave the powder in the dispenser because later you may not remember what powder you have in the dispenser
19. Follow the reloading instructions. Start the loading from starting load and follow pressure marks, bullet speed and accuracy. Do not start the loading from maximum load.
20. The influence of shorter barrel length can't be compensated by higher load or by using higher burning rate powder with same load. This will always result dangerous chamber pressure
21. When you start to load a new combination load only a few cartridges, test shoot them and follow pressure signs before increasing the load. If over pressure marks are found stop shooting and dismantle all cartridges.
22. Write down all the loads you have used / tested and the results of test shooting. Don't remember your favourite loads, check them from the manual or from your own records

Pressure signs on cases

Since an ordinary hunter or reloader do not have access to test the safety of reloaded cartridges with a pressure gun, we present here a simple way to follow overpressure marks on cases. We do not recommend to use unknown, untested cartridges loaded for another gun if you cannot be sure of the safety of these cartridges

When you are reloading , especially new untested combination in your gun, it is advisable to start from starting load and follow the pressure marks on the cases and how the bolt handles when opened. This is actually the only possible way to home check the safety of the cartridges.

Below common overpressure marks on the cases. If you experience any of these signs on your fired cases stop the shooting immediately and dismantle the remaining cartridges. Do not danger your own or surrounding safety!

Cartridge dismantling by kinetic hammer or bullet puller is a must for a hand loader

Normal pressure marks



9,3x62 cases after firing with two different powders at maximum charges → Normal pressure signs with tested gun. Used load

Vihtavuori N140	3.85 g $V_5=745$ m/s
Vihtavuori N540	4.00 g $V_5=770$ m/s

- Primer has not over expanded
- No polishing or ejector pin marks on the case head

Overpressure signs



1. Primer severely over expanded → Severe overpressure
2. Ejector slot mark imprinted on the case head → Severe overpressure
3. Primer expanded T-shape and falls off by slight knock or is loose when extracted from chamber. Primer pocket severely expanded → Dangerous overpressure. NOTE: Case destroyed beyond reuse.
4. Crater around firing pin mark → severe overpressure

Other overpressure signs

1. Bolt is stiff when opened and / or case head is polished → Severe overpressure
 2. Bolt does not open → Dangerous overpressure
 3. Primer blow through and / or case rupture causing powder gas exposure on shooters face → extremely dangerous overpressure. Risk for personal injury and certain eye damage if shot without safety glasses
- ✓ Chamber pressure in a rifle in normal situation is between 3500 – 4200 bars. Although rifles are proof tested against much higher pressures, cases do not withstand extreme pressures.
 - ✓ Pay respect and concern for overpressure since consequences can be serious

Case head space

Above mentioned primer expansion can be result of too big headspace due to over sizing of the case. On a grove type case / chamber headspace is defined by the measure between bolt head (case head) and shoulder between L1 – L2 seen on page 6. If the case is pressed too deep into the sizing die. It will result too short headspace measure on the case. This will allow the case to move forward in the chamber when firing pin strikes the primer. When primer and powder is ignited primer is pressed partly out from the pocket and it expands uncontrolled. When the case backs off due to rising chamber pressure it crushes the primer flat against the bolt head. This will result “over expanded primer” although chamber pressure is normal. This will result also other problems:

- Misfire
- Damage of the case extractor
- Rapture of case

Overpressure signs



There are two kinds of damages found on the case above

1. Headspace between case and chamber has been too big causing the case length to increase during firing

- ✓ Because of case design the lengthwise expansion will always take place in the back end of the case, on the area where thick case bottom is reduced to thin case wall.
- ✓ Due to longitude deformation on this limited area case wall thickness is greatly reduced and the case will crack or even rupture, if not immediately as in this case, it will do so after a couple of reuse

2. This case has also been exposed to severe overpressure and the rear end has greatly expanded

- ✓ One contributing factor may be oversize camber rear end because of eccentricity during chambering

Case sizing is more than just pressing the case into the sizing die. During full sizing die adjustment it is a good habit to check the degree of sizing. This is done by measuring the case head space before and after sizing. Place a tube or bigger calibre case on the case neck so that it lies against the case shoulder. Measure the length of this combination from the case fired with your gun before sizing and after sizing. The case shoulder should not be pressed down more than 0.1 mm (0.0039"). If the bolt on your rifle does not feel stiff when closed with sized case the best result is achieved when this headspace reduction is zero (0). Back the sizing die up from the case holder until this is achieved or use neck sizing die. Do not over do the sizing it will reduce both the case lifetime and accuracy.

We recommend to use either new cases or cases fired in your gun. Avoid using unknown cases. If you use known new, good condition cases fired with another gun you may face problems with the differences in the chamber dimensions. Sizing dies can't always remove all from errors from the cases. In this situation do the sizing always using a full sizing die. Adjust the die so that you will reach same headspace as with a factory new case or that the bolt can be closed easily. If you wish to have best possible accuracy fire these cases once in your gun so that the cases have expanded to the shape of your gun. This is advisable also with factory new cases.

Rifling contact / Cartridge overall length (COL)

For best accuracy we recommend to seat the bullets 1mm off from the rifling. Test different seating depths between 0.7 -1.3 mm. This may not be possible with all rifles. In these cases the overall length is set to ensure flawless feeding from the magazine. Not all weapons are sensitive for seating depth.

The cartridge overall length (COL) which gives best accuracy, is varying from barrel to barrel depending of the throat angle, length and chamber centricity. As an example my 30-06 AI is shooting 1/3 MOA when the bullet is seated 1-1.2 mm of from the rifling. The other extreme is my 9,3x62 which has a long throat and it shoots ½ MOA groups when loaded 6 mm of from the rifling and COL exceeds CIP max by 1.5 mm.



You can check the rifling contact easily by sizing the case neck partly so that the bullet is softly on the case (not tight). Seat the bullet so that you will reach contact. Close the bolt and open it carefully. Measure the COL and check the contact marks as seen in the picture left. Now seat the bullet deeper so that you have slight contact mark, picture in right and seat the bullet 1 mm shorter from this point. The optional method is to back from the situation in left 1.3-1.5 mm. Normally the best accuracy is found with COL giving 0.7-1.2 mm distance from rifling. Some barrels are extremely sensitive and some insensitive.

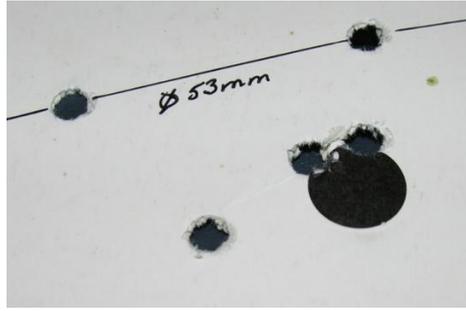
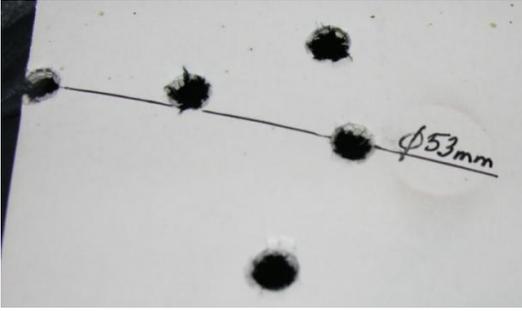
If you experience feeding problems reduce the COL by seating the bullet deeper

NOTE:

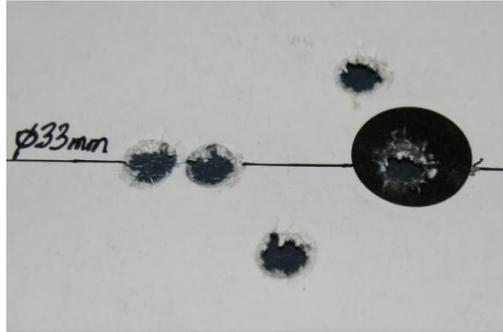
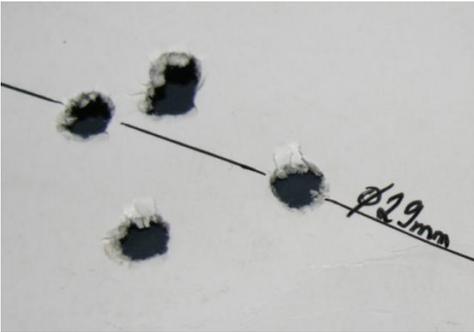
All testing has shown that if bullet is seated too far to contact rifling it will race pressures and reduce accuracy

COL	Explanation	V5 (m/s)	Group
74 mm	Heavy contact	892 m/s	50 mm
72.3 mm	0.8 mm off from rifling	878 m/s	17 mm

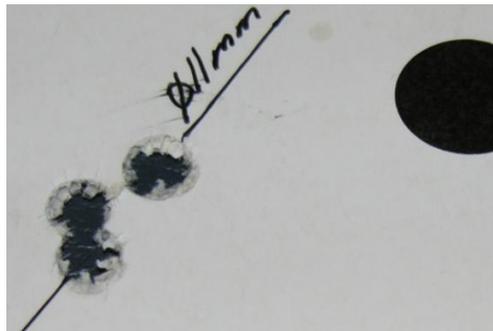
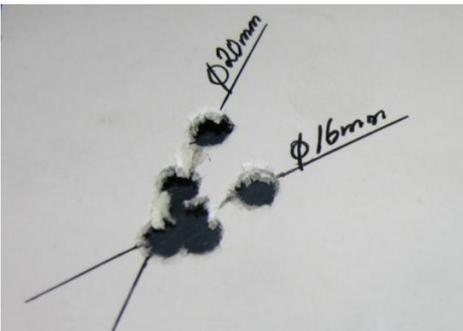
On the next page you will find results of a 5 shot test with different seating depths using CZ 550 Varmint Laminated caliber 308 WIN loaded with 10.7 g / 165 grain Tarvas with 2.80 g N140. This gun was sensitive for the seating depth. To be sure we repeated the test on next day



Seating 3 mm off. Groups are 53 mm in both tests



Seating 2 mm off. Much better accuracy around 1 MOA.

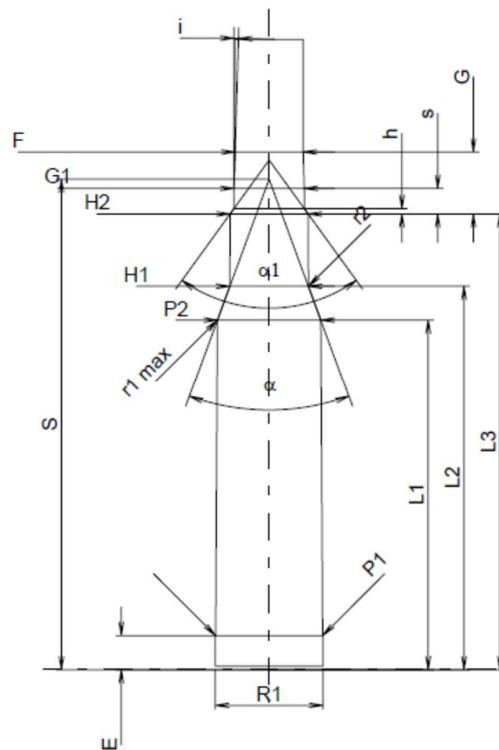
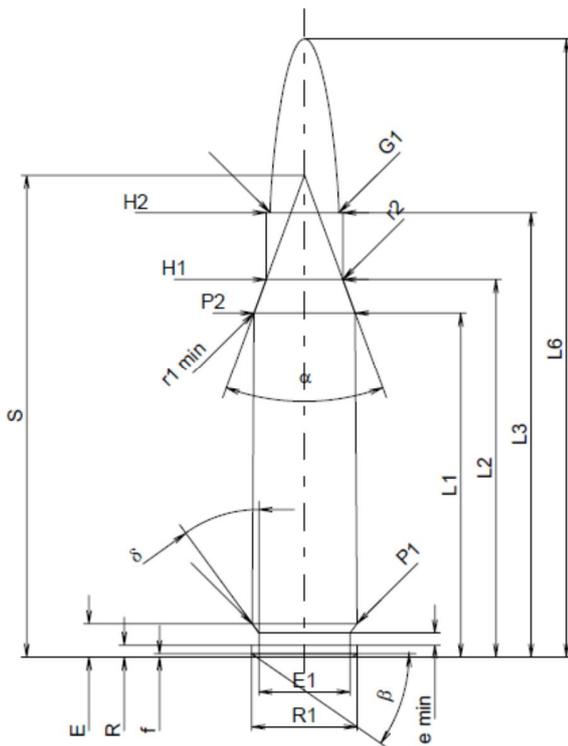


Seating 1 mm off gives $\frac{1}{2}$ MOA groups and even below!



Test cartridges used in this test 3 mm, 2 mm, and 1 mm off from rifling.

Some basic dimensions



308 Win

Cartridge Maxi (mm)

Chamber Mini (mm)

Head space min ("go")

L1 - L2

L1 - L2

L3 = Case / chamber length

51.18

51.44

Case trim length

$L3 - 0.18 = 51.00$

L6 = Cartridge max

71.12

Z = Groove diameter

7.82

F = Bore diameter

7.62

L6 + G = start of bore dia.

58.16

F (7.62) on Tarvas .30

14.04 from bullet nose

COL giving rifling contact

$14.04 + 58.16 = 72.2$

Recommended COL

71.00 → seated 1.2 mm of from rifling

Above some basic dimension for 308 WIN according to CIP as an example. The measurement **L3 is the recommended max length of the case**. If the case is longer than chamber **L3** the case neck is pressed on the bullet and results to extreme chamber pressure. For this reason when reloading you should check case length and trim the case to recommended trim length. This is usually 0.2 mm shorter than max recommended case length and 0.4 mm shorter than chamber minimum. **Case trimming is a must when reloading. Never exceed max case length**

Cartridge overall length (COL) L6 which is giving 1 mm clearance from rifling (free flight), can be calculated from CIP chamber throat length and bullet dimensions. Since the standard is only defining max cartridge and min chamber dimensions, length where 1 mm clearance from the rifling is reached may vary from barrel to barrel

CIP defines the **max cartridge length L6**. If your cartridges fit in the magazine, it feeds flawlessly and the bullet is clearly guided by case neck you can exceed this max length provided that the bullet is 1 mm of from rifling

Load data

1 g = 15.43 grain

1 fps = 0.3048 m/s

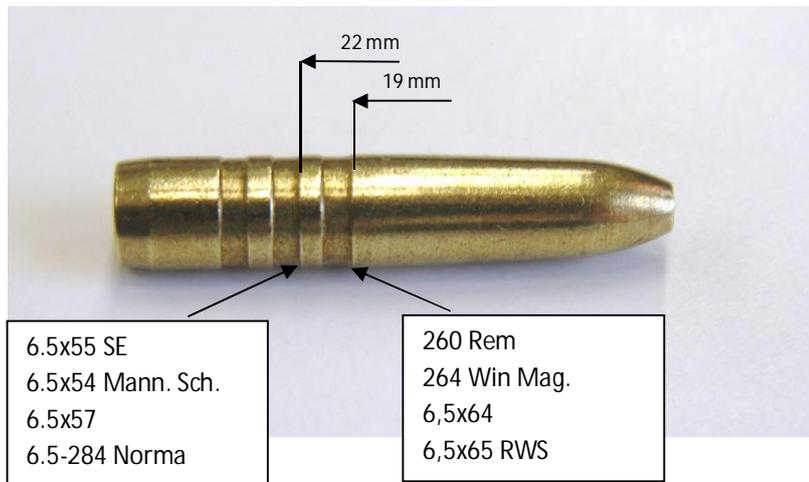
1' = 12" = 0.3048 m

1" = 25.4 mm

Gram → Grain

Paino 1-2 (g)	Paino (grain)	Paino 2-3 (g)	Paino (grain)	Paino 3-4 (g)	Paino (grain)	Paino 4-5 (g)	Paino (grain)
1	15,4	2	30,9	3	46,3	4	61,7
1,02	15,7	2,02	31,2	3,02	46,6	4,02	62,0
1,04	16,0	2,04	31,5	3,04	46,9	4,04	62,3
1,06	16,4	2,06	31,8	3,06	47,2	4,06	62,6
1,08	16,7	2,08	32,1	3,08	47,5	4,08	63,0
1,1	17,0	2,1	32,4	3,1	47,8	4,1	63,3
1,12	17,3	2,12	32,7	3,12	48,1	4,12	63,6
1,14	17,6	2,14	33,0	3,14	48,5	4,14	63,9
1,16	17,9	2,16	33,3	3,16	48,8	4,16	64,2
1,18	18,2	2,18	33,6	3,18	49,1	4,18	64,5
1,2	18,5	2,2	33,9	3,2	49,4	4,2	64,8
1,22	18,8	2,22	34,3	3,22	49,7	4,22	65,1
1,24	19,1	2,24	34,6	3,24	50,0	4,24	65,4
1,26	19,4	2,26	34,9	3,26	50,3	4,26	65,7
1,28	19,8	2,28	35,2	3,28	50,6	4,28	66,0
1,3	20,1	2,3	35,5	3,3	50,9	4,3	66,3
1,32	20,4	2,32	35,8	3,32	51,2	4,32	66,7
1,34	20,7	2,34	36,1	3,34	51,5	4,34	67,0
1,36	21,0	2,36	36,4	3,36	51,8	4,36	67,3
1,38	21,3	2,38	36,7	3,38	52,2	4,38	67,6
1,4	21,6	2,4	37,0	3,4	52,5	4,4	67,9
1,42	21,9	2,42	37,3	3,42	52,8	4,42	68,2
1,44	22,2	2,44	37,6	3,44	53,1	4,44	68,5
1,46	22,5	2,46	38,0	3,46	53,4	4,46	68,8
1,48	22,8	2,48	38,3	3,48	53,7	4,48	69,1
1,5	23,1	2,5	38,6	3,5	54,0	4,5	69,4
1,52	23,5	2,52	38,9	3,52	54,3	4,52	69,7
1,54	23,8	2,54	39,2	3,54	54,6	4,54	70,1
1,56	24,1	2,56	39,5	3,56	54,9	4,56	70,4
1,58	24,4	2,58	39,8	3,58	55,2	4,58	70,7
1,6	24,7	2,6	40,1	3,6	55,5	4,6	71,0
1,62	25,0	2,62	40,4	3,62	55,9	4,62	71,3
1,64	25,3	2,64	40,7	3,64	56,2	4,64	71,6
1,66	25,6	2,66	41,0	3,66	56,5	4,66	71,9
1,68	25,9	2,68	41,4	3,68	56,8	4,68	72,2
1,7	26,2	2,7	41,7	3,7	57,1	4,7	72,5
1,72	26,5	2,72	42,0	3,72	57,4	4,72	72,8
1,74	26,8	2,74	42,3	3,74	57,7	4,74	73,1
1,76	27,2	2,76	42,6	3,76	58,0	4,76	73,4
1,78	27,5	2,78	42,9	3,78	58,3	4,78	73,8
1,8	27,8	2,8	43,2	3,8	58,6	4,8	74,1
1,82	28,1	2,82	43,5	3,82	58,9	4,82	74,4
1,84	28,4	2,84	43,8	3,84	59,3	4,84	74,7
1,86	28,7	2,86	44,1	3,86	59,6	4,86	75,0
1,88	29,0	2,88	44,4	3,88	59,9	4,88	75,3
1,9	29,3	2,9	44,7	3,9	60,2	4,9	75,6
1,92	29,6	2,92	45,1	3,92	60,5	4,92	75,9
1,94	29,9	2,94	45,4	3,94	60,8	4,94	76,2
1,96	30,2	2,96	45,7	3,96	61,1	4,96	76,5
1,98	30,6	2,98	46,0	3,98	61,4	4,98	76,8
2	30,9	3	46,3	4	61,7	5	77,1

6.5 mm / .264



6.5 seating instructions for Tarvas 8.4 g bullet with some general examples for seating when crimping is used. NOTE: Crimping is not obligatory

	6,5x55SE	260 Rem
Cartridge CIP max	80.00 mm	71.12 mm
Case CIP max	55.00 mm	71.70 mm
Case trim length	54.80 mm	71.50 mm
Recommended COL	77.00 mm or 1mm off lands	71.00 mm or 1mm off lands
Recommended twist	8.7" or faster	8.7" or faster
Primer	Large rifle (LR)	Large rifle (LR)

Bullet Tarvas 6.5 mm- 8.4 g / 130 grain

260 Rem	Starting load	Best accuracy	Max load
Vihtavuori N540	2.17 g V ₅ =720 m/s		2.44 g V ₅ =810 m/s
Vihtavuori N550	2.26 g V ₅ =720 m/s		2.59 g V ₅ =815 m/s
Vihtavuori N160	2.32 g V ₅ =700 m/s		2.75 g V ₅ =810 m/s
6.5x55SE	Starting load	Best accuracy	Max load
Vihtavuori N160	2.72 g V ₅ =810 m/s		3.00 g V ₅ =880 m/s
Vihtavuori N560	3.05 g V ₅ =830 m/s	3.10 g V₅=840 m/s	3.20 g V ₅ =890 m/s
Vihtavuori N165	3.24 g V ₅ =860 m/s	3.30 g V₅=890 m/s	3.35 g V ₅ =910 m/s *)

Best tested

*) Compressed load

Use max load with caution

Do not load lower than minimum loads

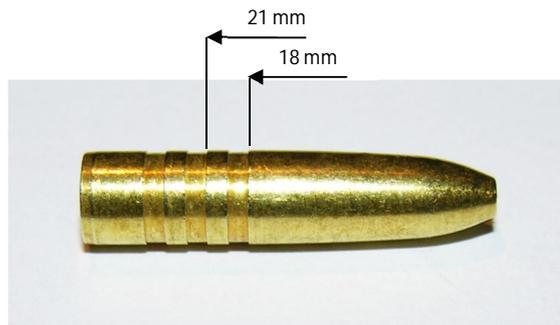
.270 (7.04 mm) – 8,4 g / 130 grain

General

This caliber suffers of its twist rate 10" designed for 130 grain / 8,4 g lead core bullets. When shooting long, heavy copper or brass bullets stability becomes an issue. There for if you are planning to build a custom gun or rebarrel your rifle you might find 9" or at least 9,5" twist rate better than the std 10"

The 270 Winchester turns out to be fast and straight shooting caliber. It seems to shoot best with Vihtavuori 160 powder and good qualitu large rifle (LR) primers

.270 8.4 g / 130 grain.



.270 Win

Crtridge CIP max	84.84 mm
Cse CIP max	64.52 mm
Case trim leght	64.30 mm
Cartridge legth COL	84 mm or 1 mm off from rifling
Recomended twist	10" or faster
Primer	Large rifle (LR)

.270 – 8.4 g / 130 grain

.270 Win	Starting load	Best accuracy	Max load
Vihtavuori N160	3.30 g $V_5=859$ m/s	3.55 g $V_5=916$ m/s	3.55 g $V_5=916$ m/s
Vihtavuori N165	3.50 g $V_5=845$ m/s	3.60 g $V_5=865$ m/s	3.80 g $V_5=926$ m/s
Vihtavuori N560	3.50 g $V_5=845$ m/s		3.73 g $V_5=921$ m/s

.270 (7.04 mm) – 9.1 g / 140 grain

General

This caliber suffers of its twist rate 10" designed for 130 grain / 8,4 g lead core bullets. When shooting long, heavy copper or brass bullets stability becomes an issue. There for if you are planning to build a custom gun or rebarrel your rifle you might find 9" or at least 9,5" twist rate better than the std 10"

The 270 Winchester turns out to be fast and straight shooting caliber. It seems to shoot best with Vihtavuori 160 powder and good qualitu large rifle (LR) primers



.270 Win

Crtridge CIP max	84.84 mm
Cse CIP max	64.52 mm
Case trim leght	64.30 mm
Cartridge legth COL	84 mm or 1 mm off from rifling
Recomended twist	10" or faster
Primer	Large rifle (LR)

.270 – 9.1 g / 140 grain

.270 Win

Vihtavuori N160
Vihtavuori N165
Vihtavuori N560

Aloituslataus

3.00 g $V_5 = 820$ m/s
3.40 g $V_5 = 825$ m/s
3.30 g $V_5 = 792$ m/s

Paras tarkkuus

3.30 g $V_5 = 870$ m/s
3.60 g $V_5 = 870$ m/s
3.55 g $V_5 = 860$ m/s

Maksimilataus

3.30 g $V_5 = 870$ m/s
3.62 g $V_5 = 879$ m/s
3.60 g $V_5 = 886$ m/s

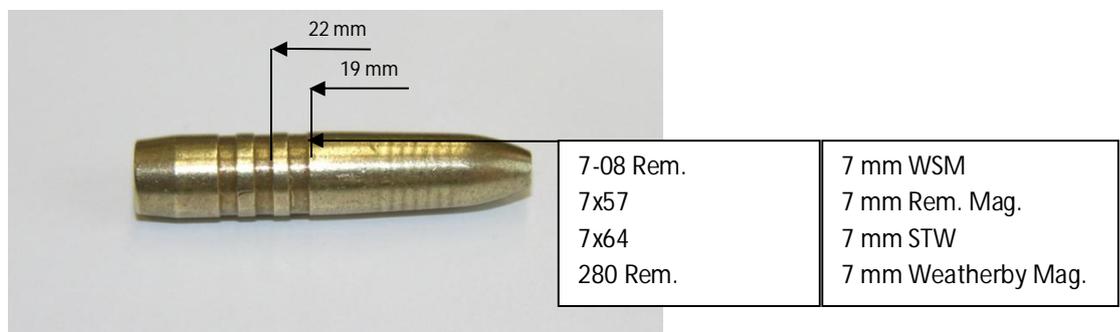
7 mm / .284 - 9,7g / 150 grain

In this caliber we have a small challenge. The barrel dimensions are different on European and US system. Below a table of barrel main dimensions in mm according to CIP standard

	7 mm US System					7 mm European System		
	7-08 Rem.	284 Win	7 mm Rem. Mag.	280 Rem.	7 mm STW	7x57	7x64	7 mm SE
Bore	7,04	7,00	7,04	7,04	7,02	6,98	6,98	6,98
Groove	7,21	7,19	7,21	7,21	7,21	7,24	7,24	7,24
Projectile	7,23	7,21	7,23	7,23	7,23	7,25	7,25	7,24

In a perfect world we would have two different bullets separately for both systems. However this includes a risk to mix these bullets and consequently cause increase of chamber pressure since solid material bullets like Tarvas do not deform in the barrel as easily as lead core bullets. For this reason, as on calibre .30, we have made only one bullet having dimensions according to the US system. When doing so this bullet can be shot in both system barrels safely and without losing accuracy

7 mm 9,7g / 150 grain seating instructions with some general examples for seating and crimping



	7-08 Rem	7x57 Mauser	7 mm Rem Mag
Cartridge CIP max	71.12 mm	78.00 mm	83.57 mm
Case CIP max	51.69 mm	57.00 mm	63.50 mm
Case trim length	51.50 mm	56.80 mm	63.30 mm
Recommended COL	71.00 mm	83.50 mm	82.50 mm or 1mm off lands
Recommended twist	10" or faster	10" or faster	10" or faster
Primer	Large rifle (LR)	Large rifle (LR)	Large rifle magnum (LRM)

	Starting load	Best accuracy	Max load
7-08 Rem			
Vihtavuori N540	2.40 g V ₅ =740 m/s		2.66 g V ₅ =824 m/s
Vihtavuori N550	2.60 g V ₅ =740 m/s	2.85 g V ₅ =825 m/s	2.88 g V ₅ =825 m/s
Vihtavuori N160	2.85 g V ₅ =755 m/s	3.00 g V₅=780 m/s	3.05 g V ₅ =805 m/s ^{*)}
7x57 Mauser			
Vihtavuori N550	2.60 g V ₅ =730 m/s		2.90 g V ₅ =810 m/s
Vihtavuori N160	2.90 g V ₅ =760 m/s		3.10 g V ₅ =820 m/s
7 mm Rem Mag			
Vihtavuori N160	3.50 g V ₅ =830 m/s	3.75 g V₅=880 m/s	3.80 g V ₅ =900 m/s
Vihtavuori N165	3.80 g V ₅ =840 m/s		4.10 g V ₅ =925 m/s

Best tested

^{*)} Compressed load

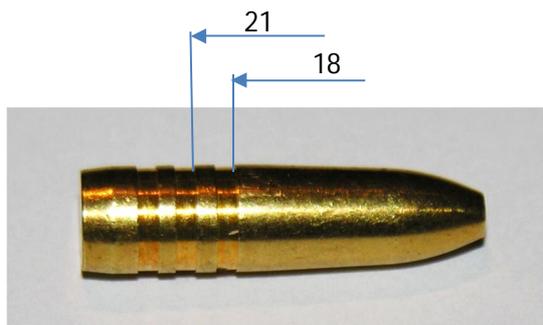
Use max load with caution

Do not load lower than minimum loads

Caliber 30

Note that 7.62x53R and 7.62x39 (Kalashnikov) grooves are 7.91 mm / .311 and bullet diameter 7.85 – 7.91 mm. Caliber .30 bullets are 7.82 mm. These bullets can be shot with caliber 7,62x53R guns safely and with good accuracy. In some cases the 7,62x53R guns are re-barreled with .308 barrels (7.82 mm)

- Tarvas 10.7 g 165 grain can be shot with all caliber 30 guns. Bullet is designed especially for 308 Win
- Tarvas 11.7 g / 180 grain bullet can be shot with all .30 / 7.62 caliber guns with minimum rate of twist 11". Standard rate of twist on 308Win is 12" which is not enough to stabilize 11.7 g Tarvas. Some manufacturers have standardized same rate of twist like Sako and Tikka 11" on all caliber 30 guns. Since penetration on all Tarvas bullets is more than generous 308 Win does not gain anything when shot with the heavier Tarvas which suits better on 30-06 SPRG and 300 magnums



TARVAS Caliber 30 / 150 grain / 9.7 g

	308 Win	30-06 SPRG	7,62x53R
Cartridge CIP max	71.12 mm	84.84 mm	77.00 mm
Case CIP max	51.18 mm	63.35 mm	53.50 mm
Case trim length	51.00 mm	63.10 mm	53.30 mm
Cartridge COL	71.00 mm	83.50 mm	72.50 mm or 1 mm off from rifling
Twist	12" or faster	12" or faster	12" or faster
Primer	Large rifle (LR)	Large rifle (LR)	Large rifle (LR)

308 Win

	Start load	Best accuracy	Max load
Vihtavuori N133	2.40 g V ₅ =790 m/s	2.50 g V ₅ =814 m/s	2.60 g V ₅ =831 m/s
Vihtavuori N135	2.60 g V ₅ =810 m/s	2.75 g V₅=860 m/s	2.75 g V ₅ =860 m/s
Vihtavuori N140	2.70 g V ₅ =800 m/s	2.90 g V₅=855 m/s	2.90 g V ₅ =855 m/s
Vihtavuori N540	2.70 g V ₅ =764 m/s	2.85 g V ₅ =820 m/s	2.95 g V ₅ =854 m/s
Vihtavuori N150	2.80 g V ₅ =810 m/s	2.85 g V ₅ =820 m/s	3.00 g V ₅ =865 m/s

7,62x53R

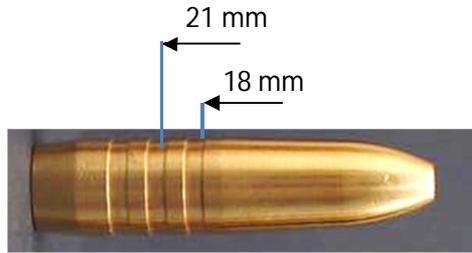
	Start load	Best accuracy	Max load
Vihtavuori N135	2.75 g V ₅ =810 m/s		2,93 g V ₅ =860 m/s
Vihtavuori N140	3.00 g V ₅ =810 m/s		3.15 g V ₅ =860 m/s
Vihtavuori N540	2.95 g V ₅ =775 m/s		3.20 g V ₅ =860 m/s
Vihtavuori N150	2.90 g V ₅ =770 m/s		3.23 g V ₅ =870 m/s

30-06 SPRG

	Start load	Best accuracy	Max load
Vihtavuori N140	3,10 g V ₅ =809 m/s		3.25 g V ₅ =860 m/s
Vihtavuori N150	3,10 g V ₅ =815 m/s		3.35 g V ₅ =875 m/s
Vihtavuori N540	3.20 g V ₅ =820 m/s		3.30 g V ₅ =865 m/s
Vihtavuori N550	3.30 g V ₅ =800 m/s		3.60 g V ₅ =875 m/s

Paras testatuista

*) Puristuslataus



TARVAS caliber 30 / 165 grain / 10.7 g

Instructions when crimping is used. NOTE: crimping is not obligatory

	308 Win	30-06 SPRG	7,62x53R
Cartridge CIP max	71.12 mm	84.84 mm	77.00 mm
Case CIP max	51.18 mm	63.35 mm	53.50 mm
Case trim length	51.00 mm	63.10 mm	53.30 mm
Recommended COL	71.00 mm	83.50 mm	72.50 mm or 1mm off lands
Recommended twist	12" or faster	12" or faster	12" or faster
Primer	Large rifle (LR)	Large rifle (LR)	Large rifle (LR)

308 Win

	Starting load
Vihtavuori N135	2.45 g V ₅ =730 m/s
Vihtavuori N140	2.60 g V ₅ =740 m/s
Vihtavuori N540	2.70 g V ₅ =740 m/s
Vihtavuori N150	2.60 g V ₅ =720 m/s
Vihtavuori N550	2.80 g V ₅ =740 m/s

Best Accuracy

2.52 g V ₅ =755 m/s
2.80 g V₅=795 m/s
2.85 g V ₅ =800 m/s
3.05 g V ₅ =815 m/s

Max load

2.60 g V ₅ =775 m/s
2.85 g V ₅ =810 m/s
2.93 g V ₅ =835 m/s
2.90 g V ₅ =815 m/s
3.10 g V ₅ =830 m/s***

7,62x53R

	Starting load
Vihtavuori N140	2.80 g V ₅ =755 m/s
Vihtavuori N540	2.95 g V ₅ =775 m/s
Vihtavuori N150	2.90 g V ₅ =770 m/s

Best Accuracy

3.00 g V₅=810 m/s

Max load

3.05 g V ₅ =820 m/s
3.20 g V ₅ =845 m/s
3.15 g V ₅ =845 m/s

30-06 SPRG

	Starting load
Vihtavuori N140	2.85 g V ₅ =750 m/s
Vihtavuori N150	2.90 g V ₅ =750 m/s
Vihtavuori N550	3.20 g V ₅ =760 m/s
Vihtavuori N160	3.50 g V ₅ =760 m/s

Best Accuracy

3.45 g V₅=830 m/s
3.60 g V₅=810 m/s

Max load

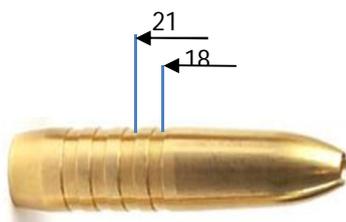
3.10 g V ₅ =805 m/s
3.15 g V ₅ =825 m/s
3.50 g V ₅ =845 m/s
3.75 g V ₅ =840 m/s

Best tested

***Compressed load

Use max load with caution

Do not load lower than minimum loads



Tarvas caliber 30 / 11.7 g / 180 grain

	308 Win	7,62x53R	30-06 SPRG	300 WSM	300 Win Mag
Cartridge CIP max	71.12 mm	77.00 mm	84.84 mm	72.64 mm	84.84 mm
Case CIP max	51.18 mm	53.50 mm	63.35 mm	53.34 mm	66.55 mm
Case trim length	51.00 mm	53.30 mm	63.10 mm	53.10 mm	66.30 mm
Recommended COL	71.00 mm	72.50 mm	83.5 mm/	84.30 mm	or 1mm off lands
Recommended twist	11" or faster	11" or faster	11" or faster	11" or faster	11" or faster
Primer	LR	LR	LR	LRM	LRM

Kaliiberilla 308 Win suosittelemme ampumaan 165 grain / 10,7 g Tarvas luotia

308 Win

	Aloitustaus
Vihtavuori N140	2.60 g $V_5=710$ m/s
Vihtavuori N540	2.63 g $V_5=700$ m/s
Vihtavuori N150	2.70 g $V_5=720$ m/s
Vihtavuori N550	2.80 g $V_5=720$ m/s

Paras tarkkuus

3.00 g $V_5=780$ m/s

Maksimilataus

2.77 g $V_5=770$ m/s
2.82 g $V_5=780$ m/s
2.85 g $V_5=775$ m/s
3.05 g $V_5=795$ m/s ***

7,62x53R

	Aloitustaus
Vihtavuori N140	2.80 g $V_5=710$ m/s
Vihtavuori N540	2.85 g $V_5=715$ m/s
Vihtavuori N150	2.80 g $V_5=710$ m/s
Vihtavuori N550	3.10 g $V_5=720$ m/s

Paras tarkkuus

Maksimilataus

3.00 g $V_5=780$ m/s
3.00 g $V_5=790$ m/s
3.03 g $V_5=780$ m/s
3.30 g $V_5=815$ m/s ***

30-06 SPRG

	Aloitustaus
Vihtavuori N150	2.75 g $V_5=750$ m/s
Vihtavuori N550	3.20 g $V_5=750$ m/s
Vihtavuori N160	3.40 g $V_5=760$ m/s
Vihtavuori N560	3.50 g $V_5=740$ m/s

Paras tarkkuus

3.37 g $V_5=815$ m/s

3.85 g $V_5=820$ m/s

Maksimilataus

3.07 g $V_5=790$ m/s
3.40 g $V_5=820$ m/s
3.60 g $V_5=815$ m/s
3.85 g $V_5=825$ m/s

300 WSM

	Aloitustaus
Vihtavuori N560	4.00 g $V_5=805$ m/s
Vihtavuori N165	4.05 g $V_5=800$ m/s

Paras tarkkuus

4.35 g $V_5=880$ m/s

4.35 g $V_5=850$ m/s

Maksimilataus

4.35 g $V_5=880$ m/s
4.45 g $V_5=870$ m/s

300 Win Mag

	Aloitustaus
Vihtavuori N160	4.05 g $V_5=830$ m/s
Vihtavuori N560	4.70 g $V_5=870$ m/s
Vihtavuori N165	4.45 g $V_5=840$ m/s

Paras tarkkuus

Maksimilataus

4.40 g $V_5=875$ m/s
4,80 g $V_5=910$ m/s
4.80 g $V_5=885$ m/s

Best tested

***Compressed load

Use max load with caution

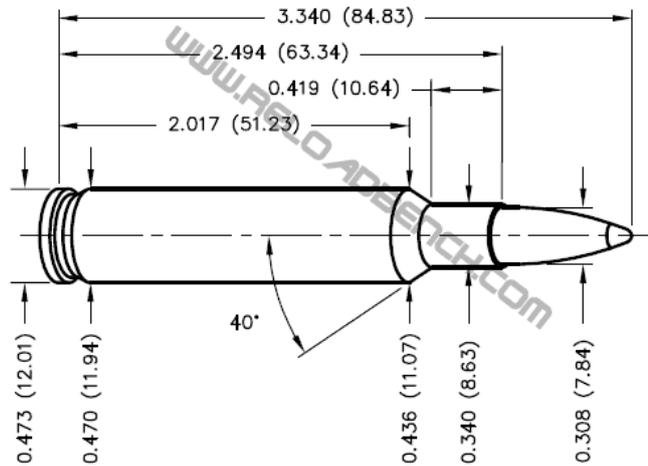
Do not load lower than minimum loads

30-06 Ackley Improved 40°

NOTE: This is a "wild cat" which corresponds 300 H&H magnum values. DO NOT USE THESE VALUES ON 30-06 SPRG!

Barrel: Krieger 62.5 cm twist 10"

NOTE: Recommended barrel min. 62 cm to reach the real potential of this caliber



30-06 Ackley Improved 40

Cartridge CIP max	84.84 mm
Case CIP max	63.35 mm
Case trim length	63.10 mm
Recommended COL	83.5 mm / 1mm off lands***)
Recommended twist	11" or faster
Primer	Large rifle (LR) or Large rifle magnum (LRM). If LRM primer is used load has to be reduced 0.1 g

***) Some 30-06 AI reamers are giving extremely short throat which may result to shorter cartridge length. If cartridge length is significantly reduced from test guns COL=83,5 mm we recommend to reduce the max load

Tarvas 10.7 g / 165 grain. (Min rate of twist 12")

Primer LR

30-06 AI	Starting load	Best accuracy	Max load
Vihtavuori N160	3.60 g V ₅ =800 m/s	3.90 g V₅=870 m/s	3.90 g V ₅ =875 m/s

Tarvas 11.7 g / 180 grain. (Min rate of twist 11")

Primer LR

30-06 AI	Starting load	Best accuracy	Max load
Vihtavuori N560	3.70 g V ₅ =800 m/s	4.00 g V₅=860 m/s	4.00 g V ₅ =860 m/s
Vihtavuori N165	3.80 g V ₅ =805 m/s	3.80 g V ₅ =805 m/s	4.05 g V ₅ =850 m/s***

Best tested

***Compressed load

Use max load with caution

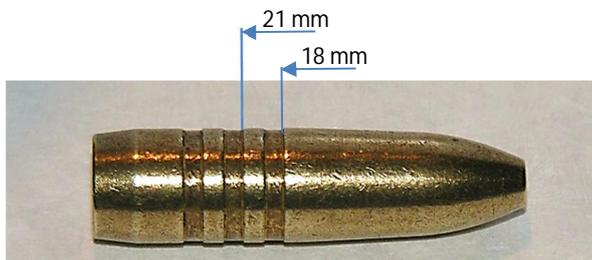
Do not load lower than minimum loads

.338

General

13.0 g / 200 grain is designed to all 338 caliber guns. It is well suited on 338 Federal and other small case 338 versions. On 338 WM it gives good performance with reduced recoil and still without meat damage. The 14.6 g / 225 grain version is well suited on all Magnums giving extremely good ballistics on long shots. Since all 338 magnum calibers are having big case volume, the recommended min barrel length is 62 cm to utilize the whole potential of the cartridge. If a shorter barrel is used bullet speed is reduced by 3-4 m/s / 1 cm → 10 cm shorter barrel will lose 35 m/s.

338 seating instructions for Tarvas 13.0 g bullet with some general examples for seating when crimping is used. NOTE: Crimping is not obligatory



	338 Win Mag	338 Federal	338-06 A-Square
Cartridge CIP max	84.84 mm	71.63 mm	87.38 mm
Case CIP max	63.50 mm	51.18 mm	63.35 mm
Case trim length	63.30 mm	51.00 mm	63.10 mm
Recommended COL	83.60 mm	71.00 mm	85.00 mm
Recommended twist	12" or faster	12" or faster	12" or faster
Primer	Large rifle magnum (LRM)	Large rifle (LR)	Large rifle (LR)

338 Federal	Starting load	Best accuracy	Max load
Vihtavuori N133	2.50 g V ₅ =710 m/s	2.80 g V ₅ =775 m/s	2.80 g V ₅ =785 m/s
Vihtavuori N135	2.60 g V ₅ =710 m/s	2.85 g V₅=785 m/s	2.90 g V ₅ =795 m/s
Vihtavuori N140	2.80 g V ₅ =720 m/s		3,00 g V ₅ =770 m/s

338-06 A-Square	Starting load	Best accuracy	Max load
Vihtavuori N140	3.20 g V ₅ =747 m/s	3.40 g V ₅ =792 m/s	3.40 g V ₅ =792 m/s
Vihtavuori N540	3.30 g V ₅ =753 m/s	3.50 g V ₅ =806 m/s	3.50 g V ₅ =806 m/s
Vihtavuori N150	3.30 g V ₅ =775 m/s	3.50 g V ₅ =810 m/s	3.50 g V ₅ =810 m/s
Vihtavuori N550	3.40 g V ₅ =734 m/s	3.70 g V₅=820 m/s	3.70 g V ₅ =820 m/s

338 Win Mag	Starting load	Best accuracy	Max load
Vihtavuori N550	3.80 g V ₅ =780 m/s		4.35 g V ₅ =880 m/s
Vihtavuori N160	4.25 g V ₅ =770 m/s	4.75 g V₅=880 m/s	4.80 g V ₅ =890 m/s

Best tested

*) Compressed load

Use max load with caution

Do not load lower than minimum loads

Tarvas .338 - 14.6 g / 225 grain



338 seating instructions for Tarvas 14.6 g bullet with some general examples for seating when crimping is used. NOTE: Crimping is not obligatory

	338 Win Mag	338 Federal	338-06 A-Square
Cartridge CIP max	84.84 mm	71.63 mm	87.38 mm
Case CIP max	63.50 mm	51.18 mm	63.35 mm
Case trim length	63.30 mm	51.00 mm	63.10 mm
Recommended COL	83.60 mm	71.00 mm	85.00 mm
Recommended twist	10" or faster	10" or faster	10" or faster
Primer	Large rifle magnum (LRM)	Large rifle (LR)	Large rifle (LR)

Tarvas 14.6 g / 225 grain

	Starting load	Best accuracy	Max load
338-06 A-Square			
Vihtavuori N150	3.20 g V ₅ =724 m/s	3.20 g V ₅ =724 m/s	3.37 g V ₅ =775 m/s
Vihtavuori N550	3.35 g V ₅ =731 m/s	3.60 g V₅=800 m/s	3.60 g V ₅ =800 m/s
Vihtavuori N160	3.70 g V ₅ =740 m/s		3.95 g V ₅ =785 m/s *)
338 Win Mag			
Vihtavuori N550	3.80 g V ₅ =750 m/s		4.30 g V ₅ =840 m/s
Vihtavuori N160	4.25 g V ₅ =750 m/s	4.65 g V₅=825 m/s	4.75 g V ₅ =845 m/s
Vihtavuori N560	4.50 g V ₅ =770 m/s		4.85 g V ₅ =830 m/s *)
338 Lapua Mag			
Vihtavuori N160	4.75 g V ₅ =790 m/s		5.35 g V ₅ =880 m/s
Vihtavuori N560	5.20 g V ₅ =820 m/s		5.75 g V ₅ =915 m/s
Vihtavuori N165	5.00 g V ₅ =800 m/s		5.80 g V ₅ =900 m/s

Best tested load

*) Compressed load

Use max load with caution. Do not load lower than minimum loads

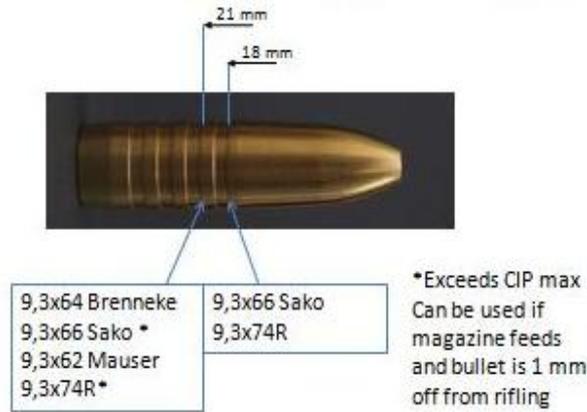
9,3x62 Mauser

In most of the CIP std. Barrels the throat is so long that it is impossible to seat the bullet as close as 1 mm of the rifling. In these cases the max seating depth is based on COL which is still feeding from the magazine. CIP max length can be exceeded if the magazine length and bullet is seated deep enough in the neck to give adequate guidance.

Measured rifling contacts:

Sako 75 COL = 90 mm (Bullet is not in the case). Magazine feeds 84 mm

CZ 550 COL = 92 mm (Bullet is not in the case). Magazine feeds 85,5 mm



TARVAS caliber 9.3 mm / 250 grain / 16.2 g

Instructions when crimping is used. NOTE: crimping is not obligatory

	9.3x62	9.3x74R	9.3x66 Sako
Cartridge CIP max	83.6 mm	95.00 mm	85.00 mm
Case CIP max	62.00 mm	74.60 mm	66.00 mm
Case trim length	61.80 mm	74.50 mm	65.80 mm
Recommended COL	83.60 mm	94.50 mm	85.00 mm
	or 1mm off lands	or 1mm off lands	or 1mm off lands
Recommended twist	14" or faster	14" or faster	14" or faster
Primer	Large rifle (LR)	Large rifle (LR)	Large rifle (LR)
9.3x62	Starting load	Best accuracy	Max load
Vihtavuori N135	3.21 g V ₅ =680 m/s		3.46 g V ₅ =725 m/s
Vihtavuori N140	3.65 g V ₅ =715 m/s	3.85 g V ₅ =745 m/s	3.85 g V ₅ =745 m/s
Vihtavuori N540	3.70 g V ₅ =725 m/s	4.00 g V₅=770 m/s	4.00 g V ₅ =770 m/s
9.3x74R	Starting load	Best accuracy	Max load
Vihtavuori N135	3.20 g V ₅ =660 m/s		3.45 g V ₅ =710 m/s
Vihtavuori N140	3.60 g V ₅ =670 m/s	3.70 g V₅=710 m/s	3.80 g V ₅ =730 m/s
Vihtavuori N540	3.60 g V ₅ =700 m/s	3.80 g V ₅ =725 m/s	3.85 g V ₅ =740 m/s
9.3x66	Starting load	Best accuracy	Max load
Vihtavuori N140	3.50 g V ₅ =710 m/s		4.00 g V ₅ =780 m/s
Vihtavuori N540	3.84 g V ₅ =740 m/s		4.15 g V ₅ =810 m/s
Vihtavuori N550	4.15 g V ₅ =760 m/s		4.37 g V ₅ =810 m/s *)

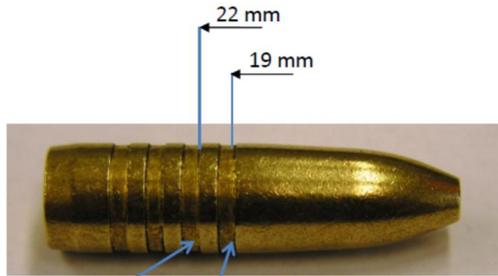
Best tested

*) Compressed load

Use max load with caution

Do not load lower than minimum loads

Instructions when crimping is used. NOTE: crimping is not obligatory



375
Flanged

375 H&H
375 Ruger

375 H&H data

Cartridge CIP max 91,44 mm
Case CIP max 72,39 mm
Case trim length 72,20 mm
Max cartridge length can be exceeded if magazine feeds and bullet is 1 mm off from rifling

375 H&H Magnum

Barrel Sako 62 cm twist 12"
Case Sako trimmed to 72.2 mm
Bullet Tarvas 17.5 g / 270 grain
Primer Winchester LRM
COL 91.4 mm or bullet seated 1 mm off from rifling

	Starting load	Best accuracy	Max load
Vihtavuori N140	Start 4.00 g V ₅ =710 m/s		Max 4.50 g V ₅ =790 m/s
Vihtavuori N540	Start 4.20 g V ₅ =740 m/s		Max 4.70 g V ₅ =820 m/s
Vihtavuori N150	Start 4.25 g V ₅ =720 m/s		Max 4.70 g V ₅ =800 m/s

Use max load with caution
Do not load lower than minimum loads