

# 7MM Mag 175 Elites RL 23

WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnell and material. The computer-results had to be checked against data available in current loading manuals.

**LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.**

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<b>User Data:</b>	<b>Date:26-Aug-2021</b>	<b>Time:21:50:11</b>	<b>File: *.dat</b>
<b>Cartridge / Caliber</b>	<b>7 mm Rem. Mag.(SAAMI)</b>	<b>Bullet</b>	<b>.284, 175, Berger Elite Hunt #28</b>
Maximum Average Pressure, allowed	61000 psi.	4206 bar (Piezo SAAMI)	with boattail
Groove Caliber	0.284 in.	7.21 mm	Bullet Weight
Case Capacity, overflow	82.0 gr. H2O	5.324 cm³	Bullet Length
Case Length	2.500 in.	63.5 mm	Bullet Seating Depth
Cartridge O.A. Length	3.290 in.	83.57 mm	Barrel/Tube Length
Shot Start / Init Pressure	3626 psi.	250.0 bar	Cross Section Area of Bore
			0.06261 in.²
			0.4039 cm²
<b>Propellant type</b>	<b>Alliant Reloder-23 *C *T</b>		
Charge Weight	65.0 gr.	4.212 gm	Load Density
Heat of Explosion, Potential	244.3 J/gr.	3770 J/gm	Energy Density of Charge
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv
Burning Rate Factor Ba	0.425 1/s		Weighting Factor
Burning Function Limit Z1	0.626		Prog.-/ Degressivity Factor a0
Factor b	2.239		Bulk Density
			229.4 gr./in.³
			56027 J/in.³
			1.2246
			0.5
			1.412
			227.6 gr./in.³
			0.907 gm/cm³
			3419 J/cm³

## Calculated and Estimated Data:

Bullet Shank Seating Depth	0.477 in.	12.12 mm	Capacity Displaced by Seated Bullet	0.0415 in.³	0.68 cm³
Useable Case Capacity	0.2834 in.³	4.644 cm³	Bullet Travel at Muzzle Exit	24.21 in.	614.98 mm
Loading Ratio("Density") / Filling	100.8 % = compressed		Charge Fraction Burnt at Shot Start	1.43 %	

## Predicted Data:

Maximum Chamber Pressure	65788 psi.	4536 bar	Bullet Travel at Pmax	2.75 in.	69.9 mm
<b>at Muzzle Exit:</b>					
Bullet Velocity	2962 fps.	902.7 m/s	Pressure at Muzzle	10629 psi.	733 bar
Bullet Energy	3409 ft.lbs.	4621 Joule	Bullet Barrel Time	1.269 ms	
Propellant Burnt	100.0 %		Ballistic Efficiency	29.1 %	

**D A N G E R : PRESSURE EXCEEDS ALLOWED MAXIMUM LEVEL !**

Real maximum (peak) of pressure is reached while bullet moves within barrel.  
End of combustion reached before bullet's base passes muzzle.

## Table of incremented charges ranging from +5.0% to -10.0% of above specified charge

**D A N G E R ! :** Table data may exceed maximum average pressures ! Pressures exceeding SAAMI or CIP specs are printed underlined!

Diff. %	Charge Weight Gramm	Grains	Muzzle Vel. m/s	fps	Muzzle Energy Joule	ft.lbs	Max. Pressure bar	psi	Muzzle Pressure bar	psi	Prop.Burnt %	B_Time ms	L.R./Filling %
-10.0	3.79	58.5	827	2713	3878	2861	3282	47605	692	10041	100.0	1.465	91
-9.0	3.83	59.2	835	2739	3951	2914	3391	49184	697	10103	100.0	1.444	92
-8.0	3.87	59.8	842	2764	4024	2968	3503	50812	701	10164	100.0	1.423	93
-7.0	3.92	60.5	850	2789	4098	3022	3619	52489	705	10225	100.0	1.402	94
-6.0	3.96	61.1	858	2814	4172	3077	3738	54219	709	10285	100.0	1.382	95
-5.0	4.00	61.8	865	2839	4246	3131	3861	56002	713	10344	100.0	1.362	96
-4.0	4.04	62.4	873	2864	4320	3186	3988	57840	717	10402	100.0	1.343	97
-3.0	4.09	63.1	880	2888	4395	3241	4119	59736	721	10460	100.0	1.324	98
-2.0	4.13	63.7	888	2913	4470	3297	<u>4253</u>	<u>61691</u>	725	10517	100.0	1.305	99
-1.0	4.17	64.4	895	2937	4545	3353	<u>4393</u>	<u>63708</u>	729	10573	100.0	1.287	100
<b>Nominal</b>	<b>4.21</b>	<b>65.0</b>	<b>903</b>	<b>2962</b>	<b>4621</b>	<b>3409</b>	<u>4536</u>	<u>65788</u>	<b>733</b>	<b>10629</b>	<b>100.0</b>	<b>1.269</b>	<b>101</b>
+1.0	4.25	65.7	910	2986	4698	3465	<u>4684</u>	<u>67934</u>	737	10683	100.0	1.252	102
+2.0	4.30	66.3	918	3010	4774	3521	<u>4837</u>	<u>70149</u>	740	10737	100.0	1.234	103
+3.0	4.34	67.0	925	3035	4851	3578	<u>4994</u>	<u>72435</u>	744	10790	100.0	1.218	104
+4.0	4.38	67.6	932	3059	4929	3635	<u>5157</u>	<u>74795</u>	748	10842	100.0	1.201	105
+5.0	4.42	68.3	940	3083	5007	3693	<u>5325</u>	<u>77232</u>	751	10893	100.0	1.185	106

## Results caused by ±5% powder lot-to-lot burning rate variation using nominal charge

Data for burning rate increased by 5% relative to nominal value :

Nominal	4.21	65.0	916	3005	4758	3509	<u>4994</u>	<u>72427</u>	721	10464	100.0	1.223	101
Data for burning rate decreased by 5% relative to nominal value :													
Nominal	4.21	65.0	887	2909	4457	3288	4076	59122	747	10827	100.0	1.323	101