

.308 Win - Lapua Scenar GB422 167gr - RS50

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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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User Data:	Date:29-Mrz-2016	Time:07:50:41	File: *.dat
Comment	26" barrel - 71.12mm COL - 42.5gr start load - 756m/s - 2858bar		
Cartridge / Caliber	.308 Win. (CIP)	Bullet	.308, 167, Lapua Scenar GB422 706
Maximum Average Pressure, allowed	4150 bar	60191 psi. (Piezo CIP)	with boattail
Groove Caliber	7.82 mm	0.308 in.	Bullet Weight
Case Capacity, overflow	3.636 cm³	56.0 gr. H2O	Bullet Length
Case Length	51.16 mm	2.014 in.	Bullet Seating Depth
Cartridge O.A. Length	71.12 mm	2.800 in.	Barrel/Tube Length
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore
			0.4751 cm² 0.07364 in.²
Propellant type	ReloadSwiss RS 50		
Charge Weight	2.754 gm	42.5 gr.	Load Density
Heat of Explosion, Potential	3815 J/gm	247.2 J/gr.	Energy Density of Charge
Propellant Solid Density	1.61 gm/cm³	407.15 gr./in.³	Used Ratio of Specific Heats cp/cv
Burning Rate Factor Ba	0.512 1/s		Weighting Factor
Burning Function Limit Z1	0.35		Prog.-/ Degressivity Factor a0
Factor b	1.484		Bulk Density
			0.884 gm/cm³ 223.6 gr./in.³
			3371 J/cm³ 55241 J/in.³
			1.239
			0.5
			1.231
			0.957 gm/cm³ 242.0 gr./in.³
Calculated and Estimated Data:			
Bullet Shank Seating Depth	7.04 mm	0.277 in.	Capacity Displaced by Seated Bullet
Useable Case Capacity	3.117 cm³	0.1902 in.³	Bullet Travel at Muzzle Exit
Loading Ratio("Density") / Filling	92.3 %		Charge Fraction Burnt at Shot Start
			0.519 cm³ 0.0317 in.³
			620.78 mm 24.44 in.
			1.40 %
Predicted Data:			
Maximum Chamber Pressure	2858 bar	41454 psi.	Bullet Travel at Pmax
at Muzzle Exit:			34.8 mm 1.37 in.
Bullet Velocity	756.3 m/s	2481 fps.	Pressure at Muzzle
Bullet Energy	3095 Joule	2283 ft.lbs.	Bullet Barrel Time
Propellant Burnt	92.1 %		Ballistic Efficiency
			425 bar 6162 psi.
			1.415 ms
			29.5 %

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !

Real maximum (peak) of pressure is reached while bullet moves within barrel.

End of combustion occurs after the bullet's base passes muzzle.

Table of incremented charges ranging from +10.0% to -20.0% 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 %
-20.0	2.20	34.0	608	1995	2000	1475	1587	23016	320	4638	81.0	1.806	74
-18.0	2.26	34.9	623	2043	2098	1547	1684	24430	331	4801	82.3	1.763	76
-16.0	2.31	35.7	637	2091	2198	1621	1788	25928	342	4963	83.5	1.721	78
-14.0	2.37	36.6	652	2140	2301	1697	1897	27516	353	5123	84.8	1.681	79
-12.0	2.42	37.4	667	2188	2407	1775	2012	29185	364	5281	85.9	1.643	81
-10.0	2.48	38.3	682	2237	2515	1855	2133	30941	375	5436	87.1	1.604	83
-8.0	2.53	39.1	697	2286	2626	1937	2261	32795	385	5588	88.2	1.566	85
-6.0	2.59	40.0	712	2334	2740	2021	2397	34765	396	5738	89.2	1.530	87
-4.0	2.64	40.8	726	2383	2856	2106	2541	36860	406	5883	90.2	1.494	89
-2.0	2.70	41.7	741	2432	2974	2194	2695	39086	415	6025	91.2	1.453	90
Nominal	2.75	42.5	756	2481	3095	2283	2858	41454	425	6162	92.1	1.415	92
+2.0	2.81	43.4	771	2530	3219	2374	3032	43974	434	6295	93.0	1.378	94
+4.0	2.86	44.2	786	2579	3345	2467	3217	46657	443	6422	93.9	1.342	96
+6.0	2.92	45.1	801	2629	3474	2562	3414	49515	451	6544	94.6	1.308	98
+8.0	2.97	45.9	816	2678	3605	2659	3624	52563	459	6659	95.4	1.274	100
+10.0	3.03	46.8	831	2727	3738	2757	3848	55816	467	6769	96.1	1.241	102

Results caused by ±3% powder lot-to-lot burning rate variation using nominal charge

Data for burning rate increased by 3% relative to nominal value :													
Nominal	2.75	42.5	770	2526	3207	2365	3017	43760	430	6237	94.1	1.382	92
Data for burning rate decreased by 3% relative to nominal value :													
Nominal	2.75	42.5	742	2434	2979	2197	2702	39187	418	6066	90.0	1.451	92