.308 Win - Lapua Scenar GB491 155gr - RS50

User Data:

Date:29-Mrz-2016 **Time:07:46:15** **File: *.dat**

Comment **26" barrel - 71.12mm COL - 43.0gr start load - 781m/s - 2895bar**

Cartridge / Caliber	**.308 Win. (CIP)**		**Bullet**	**.308, 155, Lapua Scenar GB491 707**	
Maximum Average Pressure, allowed	4150 bar	60191 psi. (Piezo CIP)		with boattail	
Groove Caliber	7.82 mm	0.308 in.	Bullet Weight	10.04 gm	155.0 gr.
Case Capacity, overflow	3.636 cm³	56.0 gr. H2O	Bullet Length	32.69 mm	1.287 in.
Case Length	51.16 mm	2.014 in.	Bullet Seating Depth	12.72 mm	0.501 in.
Cartridge O.A. Length	71.12 mm	2.800 in.	Barrel/Tube Length	660.4 mm	26.0 in.
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	2.786 gm	43.0 gr.	Load Density	0.912 gm/cm³	230.6 gr./in.³
Heat of Explosion, Potential	3815 J/gm	247.2 J/gr.	Energy Density of Charge	3478 J/cm³	56994 J/in.³
Propellant Solid Density	1.61 gm/cm³	407.15 gr./in.³	Used Ratio of Specific Heats cp/cv	1.239	
Burning Rate Factor Ba	0.512 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.35		Prog.-/ Degressivity Factor a0	1.231	
Factor b	1.484		Bulk Density	0.957 gm/cm³	242.0 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	7.72 mm	0.304 in.	Capacity Displaced by Seated Bullet	0.58 cm³	0.0354 in.³
Useable Case Capacity	3.056 cm³	0.1865 in.³	Bullet Travel at Muzzle Exit	621.96 mm	24.49 in.
Loading Ratio("Density") / Filling	95.3 %		Charge Fraction Burnt at Shot Start	1.30 %	
Predicted Data:					
Maximum Chamber Pressure	2895 bar	41983 psi.	Bullet Travel at Pmax	33.7 mm	1.33 in.
at Muzzle Exit:					
Bullet Velocity	781.3 m/s	2563 fps.	Pressure at Muzzle	418 bar	6066 psi.
Bullet Energy	3066 Joule	2262 ft.lbs.	Bullet Barrel Time	1.363 ms	
Propellant Burnt	90.7 %		Ballistic Efficiency	28.8 %	

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		Muzzle Vel.		Muzzle Energy		Max. Pressure		Muzzle Pressure		Prop.Burnt	B_Time	L.R./Filling
%	Gramm	Grains	m/s	fps	Joule	ft.lbs	bar	psi	bar	psi	%	ms	%
-20.0	2.23	34.4	625	2052	1964	1449	1579	22898	312	4530	79.0	1.750	76
-18.0	2.28	35.3	641	2102	2062	1521	1677	24323	324	4693	80.3	1.707	78
-16.0	2.34	36.1	656	2153	2162	1595	1782	25840	335	4855	81.6	1.666	80
-14.0	2.40	37.0	672	2203	2265	1671	1893	27453	346	5016	82.9	1.626	82
-12.0	2.45	37.8	687	2254	2371	1749	2012	29177	357	5175	84.1	1.587	84
-10.0	2.51	38.7	703	2305	2480	1829	2138	31012	368	5331	85.3	1.549	86
-8.0	2.56	39.6	718	2357	2592	1912	2272	32957	378	5485	86.5	1.512	88
-6.0	2.62	40.4	734	2408	2706	1996	2414	35011	389	5636	87.6	1.476	90
-4.0	2.67	41.3	750	2460	2823	2083	2564	37187	399	5783	88.7	1.439	91
-2.0	2.73	42.1	766	2512	2944	2171	2724	39507	409	5927	89.7	1.401	93
Nominal	**2.79**	**43.0**	**781**	**2563**	**3066**	**2262**	**2895**	**41983**	**418**	**6066**	**90.7**	**1.363**	**95**
+2.0	2.84	43.9	797	2615	3192	2354	3077	44629	428	6201	91.7	1.326	97
+4.0	2.90	44.7	813	2668	3321	2449	3272	47456	436	6330	92.6	1.291	99
+6.0	2.95	45.6	829	2720	3452	2546	3481	50481	445	6454	93.5	1.256	101
+8.0	3.01	46.4	845	2772	3586	2645	3704	53720	453	6572	94.3	1.223	103
+10.0	3.06	47.3	861	2824	3723	2746	3943	57192	461	6684	95.0	1.191	105

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	2.79	43.0	796	2611	3181	2346	3059	44363	424	6153	92.8	1.330	95

Data for burning rate decreased by 3% relative to nominal value :

Nominal	2.79	43.0	766	2513	2947	2174	2734	39648	411	5959	88.4	1.398	95