.338 Win Mag - Sierra Pro-Hunter 225gr - RS50

User Data:

Date:28-Aug-2018 **Time:14:29:40** **File: *.dat**

Comment	**650mm barrel - 84.84mm COL - 60.0gr start load - 767m/s - 2985bar**				
Cartridge / Caliber	**.338 Win Mag.**		**Bullet**	**.338, 225, Sierra Pro-Hunter**	
Maximum Average Pressure, allowed	4300 bar	62366 psi. (Piezo CIP)		with flatbase	
Groove Caliber	8.59 mm	0.338 in.	Bullet Weight	14.58 gm	225.0 gr.
Case Capacity, overflow	5.584 cm³	86.0 gr. H2O	Bullet Length	32.51 mm	1.280 in.
Case Length	63.5 mm	2.500 in.	Bullet Seating Depth	11.18 mm	0.440 in.
Cartridge O.A. Length	84.84 mm	3.340 in.	Barrel/Tube Length	650.0 mm	25.5906 in.
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore	0.5695 cm²	0.08827 in.²
Propellant type	**ReloadSwiss RS 50**				
Charge Weight	3.888 gm	60.0 gr.	Load Density	0.788 gm/cm³	199.3 gr./in.³
Heat of Explosion, Potential	3815 J/gm	247.2 J/gr.	Energy Density of Charge	3006 J/cm³	49260 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	11.18 mm	0.44 in.	Capacity Displaced by Seated Bullet	0.649 cm³	0.0396 in.³
Useable Case Capacity	4.935 cm³	0.3012 in.³	Bullet Travel at Muzzle Exit	597.68 mm	23.53 in.
Loading Ratio("Density") / Filling	82.3 %		Charge Fraction Burnt at Shot Start	1.78 %	
Predicted Data:					
Maximum Chamber Pressure	2985 bar	43296 psi.	Bullet Travel at Pmax	46.3 mm	1.82 in.
at Muzzle Exit:					
Bullet Velocity	766.9 m/s	2516 fps.	Pressure at Muzzle	551 bar	7995 psi.
Bullet Energy	4288 Joule	3162 ft.lbs.	Bullet Barrel Time	1.435 ms	
Propellant Burnt	97.1 %		Ballistic Efficiency	28.9 %	

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	3.11	48.0	625	2052	2852	2103	1732	25117	429	6227	88.6	1.804	66
-18.0	3.19	49.2	640	2099	2984	2201	1830	26546	443	6424	89.7	1.786	68
-16.0	3.27	50.4	654	2146	3118	2300	1934	28051	456	6618	90.8	1.743	69
-14.0	3.34	51.6	668	2192	3256	2401	2043	29636	469	6808	91.8	1.702	71
-12.0	3.42	52.8	682	2239	3396	2505	2158	31303	482	6994	92.7	1.662	72
-10.0	3.50	54.0	697	2286	3538	2610	2279	33057	495	7175	93.6	1.624	74
-8.0	3.58	55.2	711	2332	3684	2717	2406	34903	507	7351	94.4	1.586	76
-6.0	3.65	56.4	725	2378	3831	2826	2540	36845	519	7522	95.2	1.549	77
-4.0	3.73	57.6	739	2424	3981	2936	2681	38887	530	7686	95.9	1.509	79
-2.0	3.81	58.8	753	2470	4133	3049	2829	41035	541	7844	96.6	1.471	81
Nominal	**3.89**	**60.0**	**767**	**2516**	**4288**	**3162**	**2985**	**43296**	**551**	**7995**	**97.2**	**1.435**	**82**
+2.0	3.97	61.2	781	2561	4444	3278	3149	45674	561	8139	97.7	1.400	84
+4.0	4.04	62.4	795	2607	4603	3395	3322	48178	571	8275	98.2	1.366	86
+6.0	4.12	63.6	808	2652	4763	3513	3503	50813	579	8402	98.6	1.333	87
+8.0	4.20	64.8	822	2697	4926	3633	3695	53589	588	8522	99.0	1.301	89
+10.0	4.28	66.0	836	2741	5090	3754	3896	56514	595	8633	99.3	1.270	91

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	3.89	60.0	785	2577	4498	3317	3239	46973	553	8014	98.9	1.383	82

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

Nominal	3.89	60.0	746	2446	4054	2990	2735	39667	544	7889	94.5	1.494	82