

**.300 Win Mag - Sierra SPBT 2160 180gr - RS70**

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:1-Jun-2016</b>	<b>Time:16:41:22</b>	<b>File: *.dat</b>
<b>Comment</b>	<b>620mm barrel - 84.84mm COL - 70.0gr start load - 851m/s - 2991bar</b>		
<b>Cartridge / Caliber</b>	<b>.300 Win. Mag.(@)</b>	<b>Bullet</b>	<b>.308, 180, Sierra SPBT 2160</b>
Maximum Average Pressure, allowed	4300 bar	62366 psi. (Piezo CIP)	with boattail
Groove Caliber	7.82 mm	0.308 in.	Bullet Weight
Case Capacity, overflow	5.986 cm³	92.2 gr. H2O	Bullet Length
Case Length	66.55 mm	2.620 in.	Bullet Seating Depth
Cartridge O.A. Length	84.84 mm	3.340 in.	Barrel/Tube Length
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore
			0.4732 cm² 0.07335 in.²
<b>Propellant type</b>	<b>ReloadSwiss RS 70</b>		
Charge Weight	4.536 gm	70.0 gr.	Load Density
Heat of Explosion, Potential	3950 J/gm	256.0 J/gr.	Energy Density of Charge
Propellant Solid Density	1.6 gm/cm³	404.63 gr./in.³	Used Ratio of Specific Heats cp/cv
Burning Rate Factor Ba	0.411 1/s		Weighting Factor
Burning Function Limit Z1	0.628		Prog.-/ Degressivity Factor a0
Factor b	1.963		Bulk Density
			0.843 gm/cm³ 213.2 gr./in.³
			3331 J/cm³ 54585 J/in.³
			1.2294
			0.5
			0.689
			0.980 gm/cm³ 247.8 gr./in.³
<b>Calculated and Estimated Data:</b>			
Bullet Shank Seating Depth	8.08 mm	0.318 in.	Capacity Displaced by Seated Bullet
Useable Case Capacity	5.379 cm³	0.3282 in.³	Bullet Travel at Muzzle Exit
Loading Ratio("Density") / Filling	86.0 %		Charge Fraction Burnt at Shot Start
			0.608 cm³ 0.0371 in.³
			567.88 mm 22.36 in.
			1.55 %
<b>Predicted Data:</b>			
Maximum Chamber Pressure	2991 bar	43386 psi.	Bullet Travel at Pmax
<b>at Muzzle Exit:</b>			69.4 mm 2.73 in.
Bullet Velocity	850.6 m/s	2791 fps.	Pressure at Muzzle
Bullet Energy	4220 Joule	3112 ft.lbs.	Bullet Barrel Time
Propellant Burnt	98.4 %		Ballistic Efficiency
			822 bar 11924 psi.
			1.359 ms
			23.6 %

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	3.63	56.0	678	2224	2681	1978	1655	24004	625	9067	87.5	1.738	69
-18.0	3.72	57.4	695	2280	2817	2078	1756	25466	648	9402	89.0	1.698	71
-16.0	3.81	58.8	712	2336	2957	2181	1863	27017	671	9731	90.4	1.661	72
-14.0	3.90	60.2	729	2392	3102	2288	1976	28661	693	10050	91.7	1.623	74
-12.0	3.99	61.6	746	2449	3250	2397	2096	30406	714	10360	93.0	1.586	76
-10.0	4.08	63.0	764	2506	3403	2510	2224	32255	735	10657	94.1	1.550	77
-8.0	4.17	64.4	781	2563	3559	2625	2360	34222	754	10942	95.2	1.514	79
-6.0	4.26	65.8	799	2620	3719	2743	2503	36309	773	11213	96.1	1.480	81
-4.0	4.35	67.2	816	2677	3883	2864	2656	38526	791	11467	97.0	1.438	83
-2.0	4.45	68.6	833	2734	4050	2987	2819	40880	807	11705	97.8	1.399	84
<b>Nominal</b>	<b>4.54</b>	<b>70.0</b>	<b>851</b>	<b>2791</b>	<b>4220</b>	<b>3112</b>	<b>2991</b>	<b>43386</b>	<b>822</b>	<b>11924</b>	<b>98.4</b>	<b>1.359</b>	<b>86</b>
+2.0	4.63	71.4	868	2847	4393	3240	3175	46050	836	12124	99.0	1.321	88
+4.0	4.72	72.8	885	2903	4568	3369	3371	48887	848	12303	99.4	1.285	89
+6.0	4.81	74.2	902	2959	4746	3501	3579	51908	859	12461	99.7	1.250	91
<b>+8.0</b>	<b>4.90</b>	<b>75.6</b>	<b>919</b>	<b>3015</b>	<b>4926</b>	<b>3634</b>	<b>3801</b>	<b>55129</b>	<b>868</b>	<b>12596</b>	<b>99.9</b>	<b>1.215</b>	<b>93</b>
<b>+10.0</b>	<b>4.99</b>	<b>77.0</b>	<b>936</b>	<b>3070</b>	<b>5108</b>	<b>3768</b>	<b>4037</b>	<b>58551</b>	<b>876</b>	<b>12708</b>	<b>100.0</b>	<b>1.182</b>	<b>95</b>

**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	4.54	70.0	866	2841	4374	3226	3171	45991	822	11922	99.4	1.324	86
Data for burning rate decreased by 3% relative to nominal value :													
Nominal	4.54	70.0	834	2735	4054	2990	2819	40887	817	11851	96.9	1.397	86