.30-06 Spring - Hornady SST 180gr - RS60

User Data:

Date:31-Mrz-2016 **Time:15:49:20** **File: *.dat**

Comment	**550mm barrel - 84.84mm COL - 51.0gr start load - 767m/s - 2829bar**				
Cartridge / Caliber	**.30-06 Spring. (CIP)**		**Bullet**	**.308, 180, Hornady SST InterLock 3**	
Maximum Average Pressure, allowed	4050 bar	58740 psi. (Piezo CIP)		with boattail	
Groove Caliber	7.82 mm	0.308 in.	Bullet Weight	11.66 gm	180.0 gr.
Case Capacity, overflow	4.428 cm³	68.2 gr. H2O	Bullet Length	33.99 mm	1.338 in.
Case Length	63.35 mm	2.494 in.	Bullet Seating Depth	12.49 mm	0.492 in.
Cartridge O.A. Length	84.84 mm	3.340 in.	Barrel/Tube Length	550.0 mm	21.6535 in.
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore	0.4752 cm²	0.07366 in.²
Propellant type	**ReloadSwiss RS 60**				
Charge Weight	3.305 gm	51.0 gr.	Load Density	0.858 gm/cm³	217.0 gr./in.³
Heat of Explosion, Potential	3990 J/gm	258.5 J/gr.	Energy Density of Charge	3424 J/cm³	56109 J/in.³
Propellant Solid Density	1.61 gm/cm³	407.15 gr./in.³	Used Ratio of Specific Heats cp/cv	1.2291	
Burning Rate Factor Ba	0.468 1/s		Weighting Factor	0.55	
Burning Function Limit Z1	0.695		Prog.-/ Degressivity Factor a0	0.669	
Factor b	2.192		Bulk Density	0.965 gm/cm³	244.0 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	8.43 mm	0.332 in.	Capacity Displaced by Seated Bullet	0.577 cm³	0.0352 in.³
Useable Case Capacity	3.851 cm³	0.235 in.³	Bullet Travel at Muzzle Exit	499.14 mm	19.65 in.
Loading Ratio("Density") / Filling	88.9 %		Charge Fraction Burnt at Shot Start	1.49 %	
Predicted Data:					
Maximum Chamber Pressure	2829 bar	41029 psi.	Bullet Travel at Pmax	47.7 mm	1.88 in.
at Muzzle Exit:					
Bullet Velocity	766.7 m/s	2516 fps.	Pressure at Muzzle	709 bar	10277 psi.
Bullet Energy	3429 Joule	2529 ft.lbs.	Bullet Barrel Time	1.277 ms	
Propellant Burnt	99.2 %		Ballistic Efficiency	26.0 %	

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	2.64	40.8	611	2004	2176	1605	1578	22889	544	7886	88.8	1.629	71
-18.0	2.71	41.8	626	2054	2287	1687	1673	24260	564	8180	90.3	1.591	73
-16.0	2.78	42.8	642	2105	2401	1771	1773	25713	584	8467	91.8	1.554	75
-14.0	2.84	43.9	657	2156	2519	1858	1879	27254	603	8743	93.1	1.518	76
-12.0	2.91	44.9	673	2207	2640	1947	1992	28887	621	9008	94.3	1.482	78
-10.0	2.97	45.9	688	2259	2764	2039	2111	30621	638	9260	95.4	1.448	80
-8.0	3.04	46.9	704	2310	2892	2133	2237	32451	655	9497	96.4	1.414	82
-6.0	3.11	47.9	720	2362	3022	2229	2373	34412	670	9719	97.3	1.381	84
-4.0	3.17	49.0	736	2413	3156	2327	2516	36485	684	9924	98.1	1.350	85
-2.0	3.24	50.0	751	2464	3291	2428	2667	38687	697	10110	98.7	1.313	87
Nominal	**3.30**	**51.0**	**767**	**2516**	**3429**	**2529**	**2829**	**41029**	**709**	**10277**	**99.2**	**1.277**	**89**
+2.0	3.37	52.0	782	2566	3569	2632	3001	43519	719	10423	99.6	1.242	91
+4.0	3.44	53.0	798	2617	3711	2737	3183	46171	727	10548	99.9	1.207	92
+6.0	3.50	54.1	813	2667	3854	2843	3378	48994	734	10651	100.0	1.175	94
+8.0	3.57	55.1	828	2717	3999	2950	3585	51991	740	10735	100.0	1.143	96
+10.0	3.64	56.1	843	2766	4145	3057	3807	55218	746	10813	100.0	1.112	98

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	3.30	51.0	781	2562	3557	2623	2995	43446	704	10210	99.9	1.243	89

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

Nominal	3.30	51.0	751	2464	3291	2427	2669	38707	708	10262	97.9	1.312	89