9 mm Luger - H&N KS HS 125gr - RS20

User Data:

Date:2-Jun-2020 **Time:07:59:36** **File: *.dat**

Comment **16" barrel - 27.05mm COL - 4.5gr start load - 383m/s - 1440bar**

Cartridge / Caliber	**9 mm Luger (CIP)**		**Bullet**	**.356, 125, H&N KS HS**	
Maximum Average Pressure, allowed	2350 bar	34084 psi. (Piezo CIP)		with hollowbase	
Groove Caliber	9.02 mm	0.355 in.	Bullet Weight	8.1 gm	125.0 gr.
Case Capacity, overflow	0.895 cm³	13.79 gr. H2O	Bullet Length	13.89 mm	0.547 in.
Case Length	19.15 mm	0.754 in.	Bullet Seating Depth	6.0 mm	0.236 in.
Cartridge O.A. Length	27.04 mm	1.065 in.	Barrel/Tube Length	406.4 mm	16.0 in.
Shot Start / Init Pressure	80.0 bar	1160 psi.	Cross Section Area of Bore	0.6261 cm²	0.09705 in.²
Propellant type	**ReloadSwiss RS 20**				
Charge Weight	0.292 gm	4.5 gr.	Load Density	0.559 gm/cm³	141.4 gr./in.³
Heat of Explosion, Potential	4100 J/gm	265.7 J/gr.	Energy Density of Charge	2293 J/cm³	37576 J/in.³
Propellant Solid Density	1.52 gm/cm³	384.39 gr./in.³	Used Ratio of Specific Heats cp/cv	1.229	
Burning Rate Factor Ba	2.905 1/s		Weighting Factor	0.75	
Burning Function Limit Z1	0.569		Prog.-/ Degressivity Factor a0	-0.133	
Factor b	1.465		Bulk Density	0.617 gm/cm³	156.0 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	6.0 mm	0.236 in.	Capacity Displaced by Seated Bullet	0.373 cm³	0.0228 in.³
Useable Case Capacity	0.522 cm³	0.0319 in.³	Bullet Travel at Muzzle Exit	393.25 mm	15.48 in.
Loading Ratio("Density") / Filling	90.7 %		Charge Fraction Burnt at Shot Start	0.97 %	
Predicted Data:					
Maximum Chamber Pressure	1440 bar	20882 psi.	Bullet Travel at Pmax	6.1 mm	0.24 in.
at Muzzle Exit:					
Bullet Velocity	382.7 m/s	1256 fps.	Pressure at Muzzle	52 bar	760 psi.
Bullet Energy	593 Joule	438 ft.lbs.	Bullet Barrel Time	1.382 ms	
Propellant Burnt	100.0 %		Ballistic Efficiency	49.6 %	

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 reached before bullet's base passes muzzle.

Table of incremented charges ranging from +15.0% to -30.0% 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	%
-30.0	0.20	3.2	292	957	345	254	665	9643	39	573	94.5	1.902	63
-27.0	0.21	3.3	302	990	369	272	723	10488	41	599	95.7	1.835	66
-24.0	0.22	3.4	311	1022	393	290	785	11387	43	623	96.8	1.772	69
-21.0	0.23	3.6	321	1053	418	308	851	12341	45	646	97.7	1.713	72
-18.0	0.24	3.7	330	1084	442	326	921	13357	46	667	98.5	1.656	74
-15.0	0.25	3.8	340	1115	467	345	995	14435	47	687	99.1	1.602	77
-12.0	0.26	4.0	349	1144	493	363	1074	15579	49	705	99.5	1.552	80
-9.0	0.27	4.1	358	1173	518	382	1158	16792	50	721	99.8	1.505	82
-6.0	0.27	4.2	366	1201	543	400	1246	18077	51	735	100.0	1.462	85
-3.0	0.28	4.4	375	1229	568	419	1340	19438	52	748	100.0	1.421	88
Nominal	**0.29**	**4.5**	**383**	**1256**	**593**	**438**	**1440**	**20882**	**52**	**760**	**100.0**	**1.382**	**91**
+3.0	0.30	4.6	391	1282	618	456	1545	22403	53	772	100.0	1.346	93
+6.0	0.31	4.8	399	1308	644	475	1656	24024	54	784	100.0	1.312	96
+9.0	0.32	4.9	406	1333	669	493	1774	25736	55	796	100.0	1.279	99
+12.0	0.33	5.0	414	1358	694	512	1899	27544	56	808	100.0	1.249	101
+15.0	0.34	5.2	421	1382	719	530	2031	29462	56	819	100.0	1.220	104

Results caused by ±10% powder lot-to-lot burning rate variation using nominal charge

				Data for burning rate increased by 10% relative to nominal value :									
Nominal	0.29	4.5	393	1288	625	461	1709	24787	50	718	100.0	1.316	91
				Data for burning rate decreased by 10% relative to nominal value :									
Nominal	0.29	4.5	367	1203	545	402	1193	17307	55	801	98.5	1.476	91