

.222 Rem - H&N RN HS 55 - RS20

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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User Data:	Date:1-Apr-2016	Time:15:38:47	File: *.dat
Comment	600mm barrel - 52.58mm COL - 7.0gr start load - 615m/s - 1544bar		
Cartridge / Caliber	.222 Rem.	Bullet	.224, 55, H&N RN HS
Maximum Average Pressure, allowed	3700 bar	53664 psi. (Piezo CIP)	with hollowbase
Groove Caliber	5.69 mm	0.224 in.	Bullet Weight 3.56 gm 55.0 gr.
Case Capacity, overflow	1.812 cm³	27.9 gr. H2O	Bullet Length 15.39 mm 0.606 in.
Case Length	43.18 mm	1.700 in.	Bullet Seating Depth 6.0 mm 0.236 in.
Cartridge O.A. Length	52.57 mm	2.070 in.	Barrel/Tube Length 600.0 mm 23.622 in.
Shot Start / Init Pressure	80.0 bar	1160 psi.	Cross Section Area of Bore 0.2509 cm² 0.03889 in.²
Propellant type	ReloadSwiss RS 20		
Charge Weight	0.454 gm	7.0 gr.	Load Density 0.273 gm/cm³ 69.0 gr./in.³
Heat of Explosion, Potential	4100 J/gm	265.7 J/gr.	Energy Density of Charge 1121 J/cm³ 18370 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	2.58 1/s		Weighting Factor 0.6
Burning Function Limit Z1	0.57		Prog.-/ Degressivity Factor a0 -0.042
Factor b	1.507		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	0.151 cm³	0.0092 in.³
Useable Case Capacity	1.661 cm³	0.1013 in.³	Bullet Travel at Muzzle Exit	562.82 mm	22.16 in.
Loading Ratio("Density") / Filling	44.3 %		Charge Fraction Burnt at Shot Start	2.56 %	

Predicted Data:

Maximum Chamber Pressure	1544 bar	22389 psi.	Bullet Travel at Pmax	32.1 mm	1.26 in.
at Muzzle Exit:					
Bullet Velocity	615.3 m/s	2019 fps.	Pressure at Muzzle	156 bar	2259 psi.
Bullet Energy	675 Joule	498 ft.lbs.	Bullet Barrel Time	1.493 ms	
Propellant Burnt	100.0 %		Ballistic Efficiency	36.3 %	

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 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 %
-30.0	0.32	4.9	504	1654	453	334	838	12148	115	1670	100.0	1.956	31
-27.0	0.33	5.1	516	1694	475	350	899	13041	119	1731	100.0	1.892	32
-24.0	0.34	5.3	528	1733	497	367	963	13964	123	1791	100.0	1.835	34
-21.0	0.36	5.5	540	1771	519	383	1028	14917	128	1851	100.0	1.782	35
-18.0	0.37	5.7	551	1809	542	400	1096	15898	132	1910	100.0	1.732	36
-15.0	0.39	6.0	562	1845	564	416	1166	16909	136	1969	100.0	1.685	38
-12.0	0.40	6.2	573	1881	586	432	1237	17948	140	2028	100.0	1.642	39
-9.0	0.41	6.4	584	1917	608	449	1311	19016	144	2086	100.0	1.601	40
-6.0	0.43	6.6	595	1951	630	465	1387	20112	148	2144	100.0	1.563	42
-3.0	0.44	6.8	605	1985	653	481	1464	21237	152	2202	100.0	1.527	43
Nominal	0.45	7.0	615	2019	675	498	1544	22389	156	2259	100.0	1.493	44
+3.0	0.47	7.2	625	2051	697	514	1625	23570	160	2316	100.0	1.460	46
+6.0	0.48	7.4	635	2084	719	530	1708	24779	164	2373	100.0	1.430	47
+9.0	0.49	7.6	645	2116	741	547	1794	26016	167	2429	100.0	1.401	48
+12.0	0.51	7.8	654	2147	763	563	1881	27281	171	2485	100.0	1.374	50
+15.0	0.52	8.1	664	2178	785	579	1970	28574	175	2540	100.0	1.347	51

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	0.45	7.0	617	2024	679	500	1593	23105	155	2251	100.0	1.477	44
Data for burning rate decreased by 3% relative to nominal value :													
Nominal	0.45	7.0	613	2012	670	494	1493	21650	156	2268	100.0	1.510	44