

.222 Rem - Hornady V-MAX BT 22261 50gr - RS40

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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:30-Mrz-2016	Time:15:56:56	File: *.dat
Comment	22" barrel - 54.10mm COL - 21.0gr start load - 874m/s - 2475bar		
Cartridge / Caliber	.222 Rem.	Bullet	.224, 50, Hornady V-MAX BT 22261
Maximum Average Pressure, allowed	3700 bar	53664 psi. (Piezo CIP)	with boattail
Groove Caliber	5.69 mm	0.224 in.	Bullet Weight 3.24 gm 50.0 gr.
Case Capacity, overflow	1.812 cm³	27.9 gr. H2O	Bullet Length 20.32 mm 0.800 in.
Case Length	43.18 mm	1.700 in.	Bullet Seating Depth 9.39 mm 0.370 in.
Cartridge O.A. Length	54.1 mm	2.130 in.	Barrel/Tube Length 558.8 mm 22.0 in.
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore 0.2509 cm² 0.03889 in.²

Propellant type	ReloadSwiss RS 40		
Charge Weight	1.361 gm	21.0 gr.	Load Density 0.864 gm/cm³ 218.5 gr./in.³
Heat of Explosion, Potential	3990 J/gm	258.5 J/gr.	Energy Density of Charge 3446 J/cm³ 56470 J/in.³
Propellant Solid Density	1.6 gm/cm³	404.63 gr./in.³	Used Ratio of Specific Heats cp/cv 1.2293
Burning Rate Factor Ba	0.643 1/s		Weighting Factor 0.6
Burning Function Limit Z1	0.419		Prog.-/ Degressivity Factor a0 0.782
Factor b	1.494		Bulk Density 0.938 gm/cm³ 237.2 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	7.87 mm	0.31 in.	Capacity Displaced by Seated Bullet	0.235 cm³	0.0144 in.³
Useable Case Capacity	1.576 cm³	0.0962 in.³	Bullet Travel at Muzzle Exit	525.01 mm	20.67 in.
Loading Ratio("Density") / Filling	92.1 %		Charge Fraction Burnt at Shot Start	1.46 %	

Predicted Data:

Maximum Chamber Pressure	2475 bar	35898 psi.	Bullet Travel at Pmax	35.5 mm	1.40 in.
at Muzzle Exit:					
Bullet Velocity	873.9 m/s	2867 fps.	Pressure at Muzzle	424 bar	6144 psi.
Bullet Energy	1237 Joule	913 ft.lbs.	Bullet Barrel Time	1.082 ms	
Propellant Burnt	87.7 %		Ballistic Efficiency	22.8 %	

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	1.09	16.8	700	2297	794	586	1378	19979	310	4495	74.6	1.360	74
-18.0	1.12	17.2	717	2353	833	615	1460	21169	322	4666	76.0	1.330	75
-16.0	1.14	17.6	734	2409	873	644	1547	22434	333	4837	77.4	1.300	77
-14.0	1.17	18.1	751	2465	914	674	1640	23780	345	5007	78.8	1.270	79
-12.0	1.20	18.5	769	2521	957	706	1738	25206	357	5176	80.2	1.242	81
-10.0	1.22	18.9	786	2578	1001	738	1843	26725	368	5344	81.5	1.214	83
-8.0	1.25	19.3	803	2636	1046	771	1954	28338	380	5509	82.8	1.186	85
-6.0	1.28	19.7	821	2693	1092	805	2072	30054	391	5673	84.1	1.160	87
-4.0	1.31	20.2	838	2751	1139	840	2198	31882	402	5833	85.4	1.133	88
-2.0	1.33	20.6	856	2809	1188	876	2332	33825	413	5990	86.6	1.107	90
Nominal	1.36	21.0	874	2867	1237	913	2475	35898	424	6144	87.7	1.082	92
+2.0	1.39	21.4	892	2925	1288	950	2627	38108	434	6294	88.9	1.055	94
+4.0	1.42	21.8	910	2984	1340	989	2790	40465	444	6439	89.9	1.027	96
+6.0	1.44	22.3	927	3043	1394	1028	2963	42981	454	6579	91.0	1.001	98
+8.0	1.47	22.7	945	3101	1448	1068	3149	45670	463	6713	92.0	0.974	99
+10.0	1.50	23.1	963	3160	1503	1109	3347	48545	472	6842	92.9	0.949	101

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	1.36	21.0	891	2924	1287	950	2618	37975	432	6266	90.1	1.058	92
Data for burning rate decreased by 3% relative to nominal value :													
Nominal	1.36	21.0	856	2807	1186	875	2338	33903	414	6001	85.2	1.106	92