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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:9-Apr-2015

Time:14:33:14

File: xpert 7 x 64mm bren 108gr.dat

Cartridge / Caliber

7 x 64 Brenneke

Bullet

.284, 108, XPERT TARGET M

Maximum Average Pressure, allowed	60191 psi.	4150 bar (Piezo CIP)	with flatbase	
Groove Caliber	0.285 in.	7.24 mm	Bullet Weight	108.0 gr. 7.0 gm
Case Capacity, overflow	69.0 gr. H2O	4.48 cm ³	Bullet Length	1.189 in. 30.2 mm
Case Length	2.519 in.	63.98 mm	Bullet Seating Depth	0.519 in. 13.18 mm
Cartridge O.A. Length	3.189 in.	81.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.06245 in. ² 0.4029 cm ²

Propellant type

Somchem S365

Charge Weight	56.0 gr.	3.629 gm	Load Density	233.2 gr./in. ³	0.922 gm/cm ³
Heat of Explosion, Potential	238.8 J/gr.	3685 J/gm	Energy Density of Charge	55683 J/in. ³	3398 J/cm ³
Propellant Solid Density	404.63 gr./in. ³	1.6 gm/cm ³	Used Ratio of Specific Heats cp/cv	1.239	
Burning Rate Factor Ba	0.44 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.605		Prog.-/ Degressivity Factor a0	1.715	
Factor b	2.271		Bulk Density	231.4 gr./in. ³	0.915 gm/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.519 in.	13.18 mm	Capacity Displaced by Seated Bullet	0.0332 in. ³	0.544 cm ³
Useable Case Capacity	0.2402 in. ³	3.936 cm ³	Bullet Travel at Muzzle Exit	22.0 in.	558.8 mm
Loading Ratio("Density") / Filling	100.8 % = compressed		Charge Fraction Burnt at Shot Start	1.30 %	

Predicted Data:

Maximum Chamber Pressure	44845 psi.	3092 bar	Bullet Travel at Pmax	2.47 in.	62.8 mm
at Muzzle Exit:					
Bullet Velocity	3180 fps.	969.4 m/s	Pressure at Muzzle	10357 psi.	714 bar
Bullet Energy	2426 ft.lbs.	3289 Joule	Bullet Barrel Time	1.140 ms	
Propellant Burnt	99.0 %		Ballistic Efficiency	24.6 %	

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.

