User Data:

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Cartridge / Caliber	**.300 WSM (CIP)**		**Bullet**	**.308, 130GR XPERT TARGET**	
Maximum Average Pressure, allowed	64542 psi.	4450 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.308 in.	7.82 mm	Bullet Weight	130.0 gr.	8.42 gm
Case Capacity, overflow	81.3 gr. H2O	5.279 cm³	Bullet Length	1.236 in.	31.4 mm
Case Length	2.090 in.	53.09 mm	Bullet Seating Depth	0.531 in.	13.49 mm
Cartridge O.A. Length	2.795 in.	71.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.0737 in.²	0.4755 cm²
Propellant type	**Somchem S341**				
Charge Weight	61.0 gr.	3.953 gm	Load Density	216.0 gr./in.³	0.854 gm/cm³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	51226 J/in.³	3126 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.242	
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.45		Prog.-/ Degressivity Factor a0	0.74	
Factor b	1.557		Bulk Density	250.4 gr./in.³	0.990 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.531 in.	13.49 mm	Capacity Displaced by Seated Bullet	0.0397 in.³	0.65 cm³
Useable Case Capacity	0.2825 in.³	4.629 cm³	Bullet Travel at Muzzle Exit	22.44 in.	570.0 mm
Loading Ratio("Density") / Filling	86.3 %		Charge Fraction Burnt at Shot Start	1.56 %	
Predicted Data:					
Maximum Chamber Pressure	49581 psi.	3418 bar	Bullet Travel at Pmax	2.06 in.	52.4 mm
at Muzzle Exit:					
Bullet Velocity	3131 fps.	954.2 m/s	Pressure at Muzzle	9219 psi.	636 bar
Bullet Energy	2829 ft.lbs.	3836 Joule	Bullet Barrel Time	1.124 ms	
Propellant Burnt	98.3 %		Ballistic Efficiency	26.5 %	

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.