User Data:

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Cartridge / Caliber	**.303 British**		**Bullet**	**.312, 133GR XPERT TARGET**	
Maximum Average Pressure, allowed	52939 psi.	3650 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.314 in.	7.98 mm	Bullet Weight	133.0 gr.	8.62 gm
Case Capacity, overflow	56.0 gr. H2O	3.636 cm³	Bullet Length	1.236 in.	31.4 mm
Case Length	2.213 in.	56.21 mm	Bullet Seating Depth	0.536 in.	13.61 mm
Cartridge O.A. Length	2.913 in.	74.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.07473 in.²	0.4821 cm²
Propellant type	**Somchem S335**				
Charge Weight	39.0 gr.	2.527 gm	Load Density	216.2 gr./in.³	0.855 gm/cm³
Heat of Explosion, Potential	240.4 J/gr.	3710 J/gm	Energy Density of Charge	52013 J/in.³	3174 J/cm³
Propellant Solid Density	407.15 gr./in.³	1.61 gm/cm³	Used Ratio of Specific Heats cp/cv	1.224	
Burning Rate Factor Ba	0.624 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.35		Prog.-/ Degressivity Factor a0	2.299	
Factor b	1.666		Bulk Density	227.6 gr./in.³	0.900 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.536 in.	13.61 mm	Capacity Displaced by Seated Bullet	0.0416 in.³	0.682 cm³
Useable Case Capacity	0.1803 in.³	2.954 cm³	Bullet Travel at Muzzle Exit	22.32 in.	567.0 mm
Loading Ratio("Density") / Filling	95.1 %		Charge Fraction Burnt at Shot Start	1.65 %	
Predicted Data:					
Maximum Chamber Pressure	39984 psi.	2757 bar	Bullet Travel at Pmax	1.37 in.	34.7 mm
at Muzzle Exit:					
Bullet Velocity	2624 fps.	799.7 m/s	Pressure at Muzzle	5855 psi.	404 bar
Bullet Energy	2033 ft.lbs.	2756 Joule	Bullet Barrel Time	1.239 ms	
Propellant Burnt	96.9 %		Ballistic Efficiency	29.4 %	

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.