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 S341**				
Charge Weight	43.0 gr.	2.786 gm	Load Density	238.5 gr./in.³	0.943 gm/cm³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	56568 J/in.³	3452 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	0.536 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	95.3 %		Charge Fraction Burnt at Shot Start	1.25 %	
Predicted Data:					
Maximum Chamber Pressure	40611 psi.	2800 bar	Bullet Travel at Pmax	1.24 in.	31.4 mm
at Muzzle Exit:					
Bullet Velocity	2671 fps.	814.0 m/s	Pressure at Muzzle	6270 psi.	432 bar
Bullet Energy	2106 ft.lbs.	2856 Joule	Bullet Barrel Time	1.206 ms	
Propellant Burnt	90.6 %		Ballistic Efficiency	28.0 %	

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.