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WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnel and material. The computer-results had to be checked against data available in current loading manuals.

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:18:07:36	File: xpert 303 brit 133gr.dat	
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 cm ³	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 cm ²
Propellant type	Somchem S355			
Charge Weight	43.0 gr.	2.786 gm	Load Density	238.5 gr./in. ³ 0.943 gm/cm ³
Heat of Explosion, Potential	253.4 J/gr.	3910 J/gm	Energy Density of Charge	60435 J/in. ³ 3688 J/cm ³
Propellant Solid Density	404.63 gr./in. ³	1.6 gm/cm ³	Used Ratio of Specific Heats cp/cv	1.2291
Burning Rate Factor Ba	0.5 1/s		Weighting Factor	0.5
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	2.36
Factor b	1.774		Bulk Density	227.6 gr./in. ³ 0.900 gm/cm ³

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 cm ³
Useable Case Capacity	0.1803 in. ³	2.954 cm ³	Bullet Travel at Muzzle Exit	22.32 in.	567.0 mm
Loading Ratio("Density") / Filling	104.8 % = compressed		Charge Fraction Burnt at Shot Start	1.21 %	

Predicted Data:

Maximum Chamber Pressure	40723 psi.	2808 bar	Bullet Travel at Pmax	1.55 in.	39.3 mm
at Muzzle Exit:					
Bullet Velocity	2712 fps.	826.5 m/s	Pressure at Muzzle	6609 psi.	456 bar
Bullet Energy	2172 ft.lbs.	2944 Joule	Bullet Barrel Time	1.209 ms	
Propellant Burnt	91.9 %		Ballistic Efficiency	27.0 %	

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.

