7.62 x 54 R - PrviPartizan FMJ 150gr - RS60

User Data:

Date:5-Okt-2018 **Time:08:12:19** **File: *.dat**

Comment	**730mm barrel - 74.37mm COL - 52.0gr start load - 871m/s - 2619bar**				
Cartridge / Caliber	**7.62 x 54 R Russ.Nagant**		**Bullet**	**.311, 150, PrviPartizan FMJ B**	
Maximum Average Pressure, allowed	3900 bar	56565 psi. (Piezo CIP)		with flatbase	
Groove Caliber	7.92 mm	0.312 in.	Bullet Weight	9.72 gm	150.0 gr.
Case Capacity, overflow	4.155 cm³	63.99 gr. H2O	Bullet Length	28.68 mm	1.129 in.
Case Length	53.7 mm	2.114 in.	Bullet Seating Depth	8.0 mm	0.315 in.
Cartridge O.A. Length	74.38 mm	2.928 in.	Barrel/Tube Length	730.0 mm	28.7402 in.
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore	0.4799 cm²	0.07439 in.²
Propellant type	**ReloadSwiss RS 60 *T**				
Charge Weight	3.37 gm	52.0 gr.	Load Density	0.896 gm/cm³	226.6 gr./in.³
Heat of Explosion, Potential	3990 J/gm	258.5 J/gr.	Energy Density of Charge	3576 J/cm³	58600 J/in.³
Propellant Solid Density	1.61 gm/cm³	407.15 gr./in.³	Used Ratio of Specific Heats cp/cv	1.2291	
Burning Rate Factor Ba	0.468 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.695		Prog.-/ Degressivity Factor a0	0.669	
Factor b	2.192		Bulk Density	0.965 gm/cm³	244.0 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	8.0 mm	0.315 in.	Capacity Displaced by Seated Bullet	0.395 cm³	0.0241 in.³
Useable Case Capacity	3.76 cm³	0.2295 in.³	Bullet Travel at Muzzle Exit	684.3 mm	26.94 in.
Loading Ratio("Density") / Filling	92.9 %		Charge Fraction Burnt at Shot Start	1.35 %	
Predicted Data:					
Maximum Chamber Pressure	2619 bar	37982 psi.	Bullet Travel at Pmax	42.3 mm	1.67 in.
at Muzzle Exit:					
Bullet Velocity	870.7 m/s	2857 fps.	Pressure at Muzzle	500 bar	7256 psi.
Bullet Energy	3685 Joule	2718 ft.lbs.	Bullet Barrel Time	1.429 ms	
Propellant Burnt	97.9 %		Ballistic Efficiency	27.4 %	

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.

Table of incremented charges ranging from +10.0% to -20.0% of above specified charge

D A N G E R ! : Table data may exceed maximum average pressures ! Pressures exceeding SAAMI or CIP specs are printed underlined!

Diff.	Charge Weight		Muzzle Vel.		Muzzle Energy		Max. Pressure		Muzzle Pressure		Prop.Burnt	B_Time	L.R./Filling
%	Gramm	Grains	m/s	fps	Joule	ft.lbs	bar	psi	bar	psi	%	ms	%
-20.0	2.70	41.6	692	2269	2325	1715	1450	21032	376	5449	85.3	1.831	74
-18.0	2.76	42.6	709	2326	2444	1802	1537	22296	391	5665	86.9	1.787	76
-16.0	2.83	43.7	727	2384	2566	1893	1630	23639	405	5877	88.5	1.744	78
-14.0	2.90	44.7	744	2442	2693	1986	1728	25066	419	6082	90.1	1.701	80
-12.0	2.97	45.8	762	2501	2824	2083	1833	26584	433	6280	91.5	1.660	82
-10.0	3.03	46.8	780	2560	2958	2182	1944	28196	446	6470	92.8	1.620	84
-8.0	3.10	47.8	798	2619	3097	2284	2063	29914	458	6650	94.1	1.580	85
-6.0	3.17	48.9	816	2678	3239	2389	2189	31742	470	6820	95.2	1.542	87
-4.0	3.23	49.9	834	2738	3385	2496	2323	33690	481	6978	96.2	1.504	89
-2.0	3.30	51.0	853	2797	3533	2606	2466	35767	491	7123	97.1	1.467	91
Nominal	**3.37**	**52.0**	**871**	**2857**	**3685**	**2718**	**2619**	**37982**	**500**	**7256**	**97.9**	**1.429**	**93**
+2.0	3.44	53.0	889	2916	3839	2832	2782	40347	508	7374	98.6	1.390	95
+4.0	3.50	54.1	907	2975	3996	2947	2956	42874	516	7477	99.1	1.352	97
+6.0	3.57	55.1	925	3033	4155	3065	3142	45578	522	7564	99.5	1.315	98
+8.0	3.64	56.2	942	3092	4316	3184	3342	48473	526	7636	99.8	1.280	100
+10.0	3.71	57.2	960	3150	4479	3304	3556	51574	530	7690	100.0	1.245	102

Results caused by ±3% powder lot-to-lot burning rate variation using nominal charge

Data for burning rate increased by 3% relative to nominal value :

Nominal	3.37	52.0	888	2914	3835	2829	2769	40164	500	7253	99.2	1.392	93

Data for burning rate decreased by 3% relative to nominal value :

Nominal	3.37	52.0	851	2794	3524	2599	2474	35881	496	7199	96.0	1.466	93