

SECTION I - CHARACTERISTICS
 CENTERFIRE RIFLE
 SAAMI TECHNICAL COMMITTEE MANUAL

PRESSURE DATA INTERPRETATION
 CRUSHER
 ISSUED
 REVISED

BASIC PRESSURE RANGE (1)

		<u>Pressure (CUP/100)</u>			<u>Proof</u>	
<u>Service</u>						
Maximum Average Pressure	S.D. (2)	Maximum Probable Lot Mean (3)	Maximum Probable Sample Mean (4)	Maximum Probable Individual Pressure (5)	Minimum Average Proof (6)	Maximum Average Proof (7)
130	5	133	138	148	175	185
140	6	144	150	162	190	200
160	6	164	170	182	215	225
280	11	287	297	320	375	400
300	12	308	319	344	400	430
340	14	349	362	391	455	485
350	14	359	372	401	470	500
370	15	379	393	424	495	530
380	15	389	403	434	510	545
400	16	410	425	458	535	570
430	17	441	457	492	575	615
440	18	451	468	505	590	630
450	18	461	478	515	600	645
460	18	471	488	525	615	655
500	20	513	532	573	670	715
520	21	533	553	596	695	745
530	21	543	563	606	705	760
540	22	554	575	620	720	775

Notes: Coefficient of Variation (CV) = 0.04

1. Developed from Maximum Average Pressure (MAP)
2. $\sigma = \text{MAP} \times \text{CV}$
3. $\text{MPLM} = \text{MPA} + 2\sigma_{\bar{x}}$ ($\sigma_{\bar{x}}$ = standard error = $\sigma/\sqrt{n}$)
4. $\text{MPSM} = \text{MPLM} + 3\sigma_{\bar{x}}$
5. $\text{MPIP} = \text{MPLM} + 3 \text{ S.D.}$
6. Min. Avg. Proof = $\text{MPLM} \times 1.30$ (rounded up to nearest 500 CUP)
7. Max. Avg. Proof = $\text{MPLM} \times 1.40$ (rounded down to nearest 500 CUP)

Proof S.D. = Service S.D. x 1.25 (Centerfire Rifle only)

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CENTERFIRE RIFLE
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PRESSURE DATA INTERPRETATION
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BASIC PRESSURE RANGE (1)

Service		Pressure (psi/100)			Proof	
Maximum Average Pressure	S.D. (2)	Maximum Probable Lot Mean (3)	Maximum Probable Sample Mean (4)	Maximum Probable Individual Pressure (5)	Minimum Average Proof (6)	Maximum Average Proof (7)
280	11	287	297	320	375	400
335	13	343	355	382	450	480
350	14	359	372	401	470	500
360	14	369	382	411	480	515
380	15	389	403	434	510	540
400	16	410	425	458	535	570
420	17	431	447	482	565	600
450	18	461	478	515	600	645
470	19	482	500	539	630	670
490	20	503	522	563	655	700
500	20	513	532	573	670	715
510	20	523	542	583	680	730
520	21	533	553	596	695	745
540	22	554	575	620	725	775
550	22	564	585	630	735	785
560	22	574	595	640	750	800
580	23	595	617	664	775	830
600	24	615	638	687	800	860
610	24	625	648	697	815	875
620	25	636	660	711	830	890
630	25	646	670	721	840	900
640	26	656	681	734	855	915
650	26	666	691	744	870	930

Notes: Coefficient of Variation (CV) = 0.04

1. Developed from Maximum Average Pressure (MAP)
2. $\sigma = \text{MAP} \times \text{CV}$
3. $\text{MPLM} = \text{MPA} + 2\sigma_{\bar{x}}$ ($\sigma_{\bar{x}}$ = standard error = $\sigma/\sqrt{n}$)
4. $\text{MPSM} = \text{MPLM} + 3\sigma_{\bar{x}}$
5. $\text{MPIP} = \text{MPLM} + 3 \text{ S.D.}$
6. Min. Avg. Proof = $\text{MPLM} \times 1.30$ (rounded up to nearest 500 psi)
7. Max. Avg. Proof = $\text{MPLM} \times 1.40$ (rounded down to nearest 500 psi)

Proof S.D. = Service S.D. $\times$ 1.25 (Centerfire Rifle only)

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PRESSURE DATA INTERPRETATION
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CALCULATION OF PRESSURE LIMITS

1. Given: Maximum Average Pressure (MAP)
Coefficient of Variation (CV)
2. Standard Deviation (S.D.) = MAP x CV
3. Standard Error ($\sigma_{\bar{x}}$) = $\frac{S.D.}{\sqrt{n}}$ (for all SAAMI Pressure calculations
n = 10)
4. Maximum Probable Lot Mean (MPLM) = MAP + 2 ($\sigma_{\bar{x}}$)
5. Maximum Probable Individual Pressure (MPIP) = MPLM + 3 (S.D.)
6. Maximum Probable Sample Mean (MPSM) = MPLM + 3 $\sigma_{\bar{x}}$
7. Maximum Average Pressure Extreme Variation = S. D. x 5.16.
8. Minimum Average Proof Pressure = MPLM x min proof multiplier
(min proof multiplier = 1.3)
9. Maximum Average Proof Pressure = MPLM x max proof multiplier
(max proof multiplier = 1.4)
10. Proof Standard Deviation = 1.25 x service S.D.
11. Maximum Proof Extreme Variation (EV) = Proof S.D. x 5.16

Rounding Convention

MPIP - rounded up to the nearest 100 psi
Min Avg. Proof - rounded up to the next multiple of 500 psi
Max Avg. Proof - rounded down to the next multiple of 500 psi
Proof E.V. - rounded up to the nearest 100 psi

Example

1. Given: MAP = 50,000 CV = .04
2. S.D. = 50,000 x .04 = 2,000 psi
3. $\sigma_{\bar{x}}$ = 2,000 / $\sqrt{10}$ = 633 psi
4. MPLM = 50,000 + 2(633) = 50,000 + 1266 = 51,266 rounded to 51,300 psi.
5. MPIP = 51,300 + 3(2,000) = 51,300 + 6,000 = 57,300 psi
6. MPSM = 51,300 + 3(633) = 51,300 + 1,900 = 53,200 psi
7. MAP (EV) = S.D. x 5.16 = 2,000 x 5.16 = 10,300 psi.
8. Min. Avg. Proof = 51,300 x 1.3 = 67,000 psi
9. Max. Avg. Proof = 51,300 x 1.4 = 71,500 psi
10. Proof S.D. = 1.25 x 2,000 = 2,500 psi
11. Max. Proof E.V. = 2,500 x 5.16 = 12,900 rounded up to 13,000 psi

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