

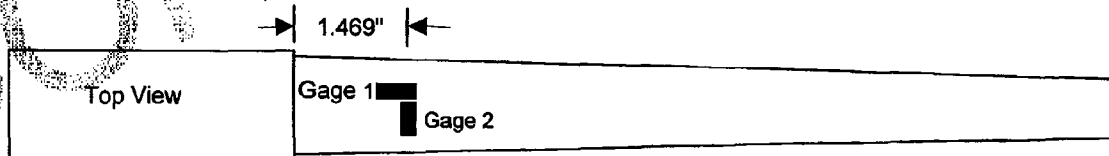
Test Lab Work Request Form

Date Submitted: 08/05/02		Tracking #: TLW 0920	STRAIN
Project #: 241230		Engineer: DR Danner	
Test Objective: Chamber Strength Audit of Non-Magnum M/710 .3006 caliber			
This test will evaluate the chamber strength performance of the M/710 firearm in 30-06 caliber. Recently it was demonstrated that the 300WinMag version would plastically deform during a progressive test employing 300WinMag proof rounds. This test will essentially repeat the work done on the 300WinMag but in 30-06 caliber to demonstrate the issue doesn't exist in the non-magnum M/710. See also Tlr 904.			
Test Description: 1. READ AND UNDERSTAND THE ENTIRE PROCEDURE PRIOR TO STARTING THE TEST. 2. Install Strain> Obtain and properly prepare a NEW M/710 firearm in 30-06 caliber for a "hoop direction" strain gauge. Locate the strain over the chamber area approximately 0.5 inches behind the cartridge shoulder location. (eg. Position the gauge such that any hoop deformation in the chamber area will be observed). 3. Headspace Measure> Before shooting, between every shot, after shooting. 4. Observer> Prior to conducting the test locate Franz/Danner to witness the execution of the test. 5. Location> Position the firearm in the "blowup" room and setup to fire the firearm via lanyard. At no time shall the firearm be fired with personnel in the blowup room. All firings shall be via lanyard and external to the room. 6. Strain Data> Standard strain gauge instrumentation should be employed. It is important that the gauge system NOT be re-zeroed during the test. Any movement off of zero will be an indication of residual hoop stress developing. 7. Multimeter> Digital voltmeter paralleled into the amplifier output, record any residual stress in volts. 8. Shooting> Proof rounds; repeat the proof/measurement process for 25 rounds (or at the discretion of Danner/Franz more or less rounds as dictated by observed performance). 9. Data> Tabulate data in Excel spreadsheet, mark firearm as "multi-proof" and "DO NOT USE FOR FURTHER TESTING".			
Resource Usage: Manpower Requirements – 1 Tech Facility Requirements –		Test Results Required: Formal Report: NO Data Only: YES REQUESTED Completion Date: 08/09/02	
Required Materials/Parts/Equipment (include quantities):		M/710 3006 Firearm, Proof Rounds, Headspace Gauges	
Test Parts Availability Date: Available now			
Start Date: 7 Aug 02 Completion Date: 9 Aug 02 Report Date: 9 Aug 02		Test Assigned To: Gary Howell 08/05/02	

ET28232

300 WM Strains 710 Brl. A-14

Tlr 896 Shot:	Scope Volts		Gage 2 Ohm Meter Volts			Notes:	1-Jul-02 Scope:
	Gage 1	Gage 2	Before	After	Diff:		
Calib:	.990	1	.000	.000		Calib.	500mv / 500us / 100mv Chl 2
1	Clip	.600	.000	.003	.003	150g	500mv / 500us / 100mv Chl 2
2	.650	1.14	.000	.193	.193	Proof	500mv / 500us / 100mv Chl 2
3	No Trigger		.193	.408	.215	Proof	500mv / 500us / 100mv Chl 1
4	.710	1.50	.408	.619	.211	Proof	500mv / 500us / 100mv Chl 1
5	.770	1.78	.617	.869	.252	Proof	500mv / 500us / 100mv Chl 1
6	Clip	Clip	.866	1.048	.182	Proof	500mv / 500us / 100mv Chl 1
7	.790	2.04	1.046	1.187	.141	Proof	500mv / 500us / 100mv Chl 1
8	.890	2.20	1.180	1.294	.114	Proof	500mv / 500us / 100mv Chl 1
9	.990	2.36	1.290	1.446	.156	Proof	500mv / 500us / 100mv Chl 1
10	.970	2.52	1.444	1.59	.146	Proof	500mv / 500us / 100mv Chl 1
11	1.110	2.70	1.587	1.762	.175	Proof	500mv / 500us / 100mv Chl 1
12	No Trigger		1.760	1.860	.100	Proof	500mv / 500us / 100mv Chl 1
13	1.090	2.86	1.848	1.917	.069	Proof	500mv / 500us / 100mv Chl 1
14	1.190	2.92	1.910	1.989	.079	Proof	500mv / 500us / 100mv Chl 1
15	1.230	2.96	1.988	2.050	.062	Proof	500mv / 500us / 100mv Chl 1
16	1.150	3.20	2.054	2.211	.157	Proof	500mv / 500us / 100mv Chl 1
17	1.090	3.20	2.201	2.242	.041	Proof	500mv / 500us / 100mv Chl 1
Max:	1.23	3.20	Sum: 2.296				



	Gage 1	Gage 2
Before	121.2	120.8
After	121.4	121.4
Diff:	+ 0.2	+ 0.6
Ohms		

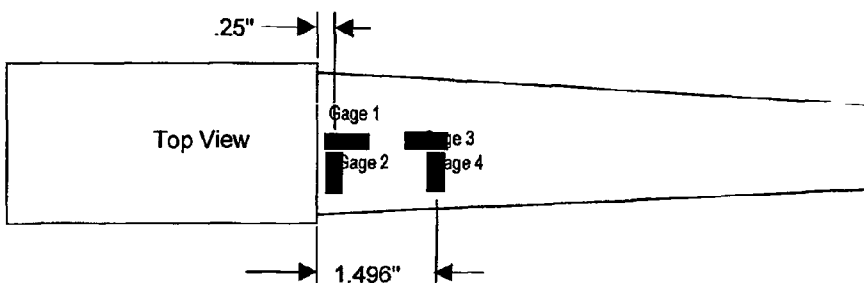
ET28233

300 WM Strains 710 Brl.

Tlr 896

28-Jun-02

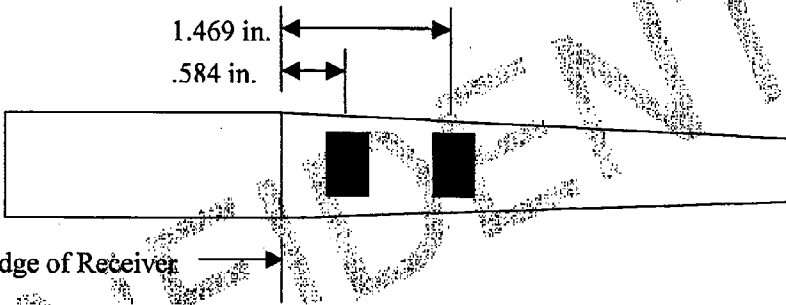
Shot:	Gage 1	Gage 2	Gage 3	Gage 4	Notes:	Scope:	Reset:
Calib:	1.00	1.01	.990	1.01	Calib.	500mv / 100us / 500mv	Bal.
1	.220	.650	.270	.630	180g	500mv / 1ms / 100mv	Bal.
2	.240	.670	.290	.630	180g	500mv / 500us / 100mv	
3	.208	.632	.268	.620	180g	200mv / 500us / 100mv	
4	.248	.632	.308	.612	180g	200mv / 500us / 100mv	
5	.304	1.328	.396	1.3	Proof	200mv / 500us / 100mv	Bal.
6	.312	1.492 Clip	.420	1.64 Clip	Proof	200mv / 500us / 100mv	Bal.
7	.300	1.95	.510	2.13	Proof	500mv / 500us / 100mv	Bal.
8	.360	1.33	.450	1.23	Proof	500mv / 500us / 100mv	Bal.
9	.380	1.15	.410	1.09	Proof	500mv / 500us / 100mv	Bal.
10	.440	1.13	.510	1.05	Proof	500mv / 500us / 100mv	Bal.
11	.400	1.21	.450	1.11	Proof	500mv / 500us / 100mv	No / Break
12	.340	1.01	.390	.950	Proof	500mv / 500us / 100mv	No
13	.320	1.07	.410	1.01	Proof	500mv / 500us / 100mv	Bal.
14	.360	1.07	.410	1.01	Proof	500mv / 500us / 100mv	No
15	.420	1.21	.470	1.09	Proof	500mv / 500us / 100mv	Bal.
16	.360	1.11	.410	1.03	Proof	500mv / 500us / 100mv	No
17	.380	1.13	.410	1.03	Proof	500mv / 500us / 100mv	No
18	.340	1.09	.390	1.03	Proof	500mv / 500us / 100mv	Bal.
19	.360	1.07	.430	.990	Proof	500mv / 500us / 100mv	No
20	.460	1.19	.510	1.11	Proof	500mv / 500us / 100mv	Bal.
21	.380	1.01	.430	.990	Proof	500mv / 500us / 100mv	No
22	.380	1.07	.430	1.03	Proof	500mv / 500us / 100mv	No
23	.440	1.35	.510	1.27	Proof / Bolt broke / Lunch	500mv / 500us / 100mv	Bal.
24	0.7	0.81	0.97	1.11	150g	500mv / 500us / 100mv	No
25	0.72	0.83	0.99	1.11	150g	500mv / 500us / 100mv	No
26	0.72	0.81	0.99	1.13	150g	500mv / 500us / 100mv	No
27	0.7	0.81	0.95	1.11	150g	500mv / 500us / 100mv	No
28	0.32	0.99	0.43	0.99	Proof	500mv / 500us / 100mv	No
29	0.3	1.01	0.37	0.99	Proof	500mv / 500us / 100mv	No
30	0.34	1.01	0.43	0.95	Proof / Bolt broke	500mv / 500us / 100mv	No



ET28234

Test Lab Work Request Form

Rev.3 -20 April, 2000

Date Submitted: 07-10-02	Tracking # : TLW 0904
Project # : 241314	Engineer: Franz for Keeney
Test Objective: Strain gauge evaluation of chamber stresses shooting standard .300 Win. Mag. Ammo.	
Test Description: Instrument a 710 300 Win. Mag. Barrel (Ser. No. 71032167 : Gun A-13) with 2 hoop strain gauges in the locations identified below. Shoot standard .300 Win. Mag. Ammo (use heaviest bullet available) and record strain throughout shooting sequence. After initial balance DO NOT rebalance the strain gage throughout the test. Call S. Franz when test is about to be shot.	
 1.469 in. .584 in. Front edge of Receiver →	
1. Install 2 hoop gages in locations identified 2. Wire for simultaneous strain recording 3. Record initial resistance of each gage 4. Hook to strain gage equipment and setup for simultaneous strain recording of full waveforms. 5. Setup in blow-up room and do all shooting with a lanyard. 6. Obtain standard Rem. .300 Win. Mag. Ammo (use heaviest bullet available) 7. Call S. Franz when ready to shoot the test. 8. Balance both gages and commence shooting standard rounds, recording and storing each waveform for each shot. 9. DO NOT REBALANCE. 10. At the conclusion of testing record the final resistance of each gage after the gun has cooled completely to ambient temperature.	
Resource Usage:	Test Results Required:

ET28235

Manpower Requirements – Facility Requirements –	Formal Report: Data Only: X Requested Completion Date:
Required Materials/Parts/Equipment (include quantities):	
Test Parts Availability Date: 07-10-02	
Start Date: Completion Date: Report Date:	Test Assigned To: Gary Howell Assignment Date: 07/10/02
Results:	

ET28236

Test Lab Work Request Form

Rev.3 -20 April 2000

Date Submitted: 12 Aug. 2002	Tracking #: TLW 0932
Project #: 241314	Engineer: Franz for Keeney
Test Objective: To measure Tangential Strain on the OD of a M/700 barrel chambered in .30-06 Springfield in the chamber area while shooting Proof ammunition.	
Test Description: • Strain Gage a new Model 700 ADL chambered in .30-06 Springfield. ○ Apply strain gage in exactly the same location as the recent 710 testing ○ Location must be determined from the breech face, about mid point of the main tapered section of the chamber. ○ Apply a single gage in the tangential direction to measure hoop strain • Measure initial resistance of the strain gage after installation • Hook up gage for monitoring in the blowup room and contact S. Franz when ready to run the test. • Calibrate strain gage via Shunt Calibration (1,000 ui/i per Volt) • Balance strain gage circuit once and then do not balance for the remainder of the test. • Shoot at least 25 consecutive proof rds. and monitor, record and store peak strain from firing, voltage after firing via volt meter and the full waveform signal, exactly like the recent 710 test procedure. • Save all the spent cases, number them sequentially. • Turn off excitation voltage after the test is complete, let stand for a minimum of ½ hour, turn on excitation and record voltage reading. Do not rebalance at any time during this procedure. • Record gage resistance at the conclusion of all testing.	
Resource Usage: Manpower Requirements -1 tech. Facility Requirements -blowup rm	Test Results Required: Formal Report: Data Only: X Requested Completion Date: 8/13/02
Required Materials/Parts/Equipment (include quantities): 1 M/700 ADL in .30-06 Springfield, strain gage and instrumentation, proof rds.	
Test Parts Availability Date: now	
Start Date: Completion Date: Report Date:	Test Assigned To: Assignment Date:

ET28237

Test Lab Work Request Form

Rev.3 -20 April, 2000

Date Submitted: 06-26-02	Tracking # : TLW 0896
Project # : 241314	Engineer: Keeney
Test Objective: Strain gauge evaluation of chamber stresses	
Test Description: Instrument a 710 300 Win. Mag. Barrel with hoop and axial strain gauges. Shoot 100 proof rounds recording strain throughout shooting sequence.	
Resource Usage: Manpower Requirements - Facility Requirements -	Test Results Required: Formal Report: Data Only: X Requested Completion Date:
Required Materials/Parts/Equipment (include quantities):	
Test Parts Availability Date: 06-26-02	
Start Date: Completion Date: Report Date:	Test Assigned To: Assignment Date:

ET28238