

REMINGTON ARMS COMPANY, INC.

INTERDEPARTMENTAL CORRESPONDENCE

Remington

SPORT

PETERS

SPORT

Distribution: C. B. Workman
J. S. Martin
C. E. Ritchie
F. S. Martin

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT - Report No. 812441

NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

Prepared by: Ron Williams

Date Prepared: 9/10/82

Proofread and Cleared By:

J.H. Hemmings, R.E. Nightingale,
Foreman-Test Lab Foreman-Measurement Lab

Signature

Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Mech. & Mech. Analysis Lab

Signature

Date

PLAINTIFF'S
EXHIBIT

3143

AL 0027889

10211

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 812441
REPORT TITLE: New Design Trigger/Sear Block Evaluation
MODEL(S): 700 ADL
GAUGE OR CALIBER: 6MM Remington
DATE: 9/10/82
WORK ORDER NO.: C-1803-000
PART NAME: Trigger Assembly
DESIGNER/ENGINEER: F. Martin

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: Static
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: 5

NO. OF ROUNDS PER GUN 2,500

TOTAL ROUNDS FIRED IN TEST: 12,500

AMMO TYPE: MAGS. _____; TARGET: _____

RIM FIRE _____ CENTER FIRE 6mm

September 10, 1982

TO: J. H. Hanning

FROM: R. Williams

REPORT TITLE: NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

ABSTRACT:

A total of (5) M/700 Fire control assemblies with the New Design safety assemblies, were delivered to the Test Lab by Fred Martin for testing. This safety assembly blocks the trigger and the sear so that the firing pin won't fall when the trigger is held back while the safety switch is pushed from the safe to fire position. Both dry cycle and live fire endurance tests were used to test the assemblies. A M/700 fire control assembly (Current Production) was used as a control and (4) out of the (5) New Design assemblies were used in the test.

SCOPE OF TEST

To evaluate the functional performance of the New Design safety assembly, in the M/700 Rifle during lab testing.

TEST RESULTS

No functional problems arose during testing. Both the New Design safety and the control functioned normally. There was no significant change in the safe On/Off forces measured before, during and after testing, on all the assemblies, including the control.

REPORT TEXT

All four (4) new trigger assemblies were subjected to the following trick test:

- o Place Safety Switch in the Safe "On" position.
- o Close the bolt.
- o Put constant pressure on the trigger attempting to fire the rifle.
- o Push the Safety Switch from the "On" position to the "Off" position.
- o Does the firing pin fall?

All four (4) New Design Trigger Assemblies with the trigger /sear blocked passed this test. In all four (4) guns the firing pin did not fall.

NOTE: The measurements recorded for the Safe On/Off forces are questionable. There is no way to determine if they are within Remington Standards, because there are no standards written for these forces with this fire control assembly. The only Remington Standards written for Safe On/Off forces, pertain to the common fire control. That Standard is:

4 - 8 lbs. - One sharp click
Double click not allowed

The Safe On/Off forces measured in this test range from 5.25 lbs. to 10.2 lbs. - almost a 5 lb. difference. (Refer to Appendix A, Data Sheets No. 1 - 5 for all Safe On/Off measurements).

TEST PROCEDUREA. MEASUREMENTS

The following measurements were taken on the five rifles used in this test:

- o Headspace
- o Firing Pin Indent
- o Trigger Pull
- o Sear Lift
- o Sear Engagement
- o Safe On/Off Forces

B. TEST CONDITIONS

1. After every 20 rounds fired, the safety was checked. This was done by holding the trigger and pushing the safety switch from safe to fire.
2. After 1,000 rds. of live fire all the rifles were cleaned and they were remeasured. (Jack Shooting).
3. The rifles were then subjected to Safe On/Off dry cycle. Each rifle was cycled for 2,500 cycles, with Safe On/Off measurements taken every 500 cycles and Sear Lift and Engagement at the 2500 cycle level.
4. The rifles were then live-fired to the 2,000 round level. (Jack Shooting) Measurements were taken at this level.

AL 0027892

4211

TEST PROCEDURE - CONT'D.

5. The rifles were then subjected to another Safe On/Off dry cycle test. They were brought to the 5,000 cycle level. (2,500 additional cycles) Safe on/off measurements were taken every 500 cycles and sear lift and engagement wear measured at the 5,000 cycle level.

These same procedures were followed until live fire totaled 2,500 rounds per rifle and safe On/Off dry cycle totaled 7500 cycles per rifle.

C. AMMUNITION

Remington 80 grain Pointed Soft Point.

A

L

E

APPENDIX

" A "

K

S

I

C

H

M-700 TRIGGER/SEAR BLOCK EVALUATION

No. 1

A 31/1982

R. Williams

M-700 / 6MM CAL # A675273	Sample No. 1	HEADSPACE	FIRING P-N INDENT	SAFE (lb)		TRIGGER PULL (lbs)	SEAR LIFT	SEAR ENGAGEMENT
				ON	OFF			
START OF TEST		MIN. +.004"	.025"	6.2	6.0	4.0	.0105"	.035"
LIVE FIRE								
after 1000 rds.		MIN. +.004"	.025"	6.2	6.8	4.25		
DRY CYCLE								
500 cyc				5.5	9.6			
1000 cyc				5.8	9.7			
1500 cyc				5.9	9.5			
2000 cyc				5.5	9.7			
2500 cyc				5.7	9.8		.0105"	.035"
LIVE FIRE								
after 2000 rds.		MIN. +.004"	.025"	5.6	7.3	4.0	.0165"	.027"
DRY CYCLE								
3000 cyc.				6.2	9.8			
3500 cyc.				6.5	10.3			
4000 cyc.				5.7	9.2			
4500 cyc.				6.2	9.5			
5000 cyc.				6.2	9.2		.0165"	.027"
LIVE FIRE								
after 2500 rds HL		MIN. +.004"	.025"	6.3	7.5	4.5		
DRY CYCLE								
5500 cyc				6.2	10.5	4.8		
6000 cyc				6.2	10.0	4.6		
6500 cyc				6.2	8.8	4.6		
7000 cyc				6.0	7.8	4.8		
7500 cyc				6.2	9.8	4.6		

AL 0027895 7/27/11

AL 0027895

7/27/82

M-700 TRIGGER/SEAR BLOCK EVALUATION

No. 2

31 APR 82

R. Williams

M-700	6MM cal. #A6744869 Sample No. 2	HEADSPACE	FIRING		SAFE		TRIGGER	SEAR	SEAR
			PIN INDENT		(in lbs)		PULL	LIFT	ENGAGEMENT
					ON	OFF	(in lbs)		
1									
2	START OF TEST	Min+.003"	.023"		65	53	4.3	.0135"	.026"
3									
4	LIVE FIRE								
5	after 1000 rds.	Min+.004"	.024"		64	52	4.4		
6									
7	DRY CYCLE								
8	500 cyc				59	7.8			
9	1000 cyc				6.0	6.7			
10	1500 cyc				6.0	7.0			
11	2000 cyc				5.5	6.7			
12	2500 cyc				5.3	7.7		.015	.025
13									
14	LIVE FIRE								
15	after 2000 rds.	Min+.004"	.023"		5.7	4.8	4.2	.014"	.029"
16									
17	DRY CYCLE								
18	3000 cyc				6.5	8.0			
19	3500 cyc				5.5	7.8			
20	4000 cyc				5.8	7.2			
21	4500 cyc				6.2	7.7			
22	5000 cyc				7.8	8.0		.018	.0285
23									
24									
25	LIVE FIRE								
26	after 2500 rds. HL.	Min+.004"	.023"		5.8	4.5	4.7		
27									
28	DRY CYCLE								
29	5500 cyc				7.0	9.5	4.8		
30	6000 cyc				6.7	8.7	4.5		
31	6500 cyc				6.7	7.8	4.5		
32	7000 cyc				7.2	7.8	4.8		
33	7500 cyc				6.6	8.5	4.5		
34									
35									
36									
37									
38									
39									
40									

AL 0027896

8/2/82

3/31/1982

M-700 TRIGGER/SEAR BLOCK EVALUATION

No. 3

R. Williams

M-700	GMMed. # A6744915 Sample No. 3	HEADSPACE	FIRING		SAFE		TRIGGER	SEAR	SEAR
			PEN INDENT		(in lbs)		PULL (lb)	LIFT	ENGAGEMENT
					ON	OFF			
	START OF TEST	Min. +.004"	.025"	9.	6.4	4.7	.015"	.025"	
	LIVE FIRE								
	after 100 bds	Min. +.004"	.026"	9.7	5.7	4.1			
	DRY CYCLE								
	500 cyc			8.2	6.9				
	1000 cyc			8.3	7.0				
	1500 cyc			8.8	6.3				
	2000 cyc			9.2	7.0				
	2500 cyc			9.9	6.0		.012"	.032"	
	LIVE FIRE								
	after 2000 bds	Min. +.005"	.026"	10.2	5.2		.013"	.033"	
	DRY CYCLE								
	3000 cyc			8.5	8.5				
	3500 cyc			9.2	7.2				
	4000 cyc			9.2	9.0				
	4500 cyc			8.7	8.7				
	5000 cyc			9.5	12.2		.015"	.032"	
	LIVE FIRE								
	after 2500 bds HL	Min. +.005"	.025"	9.8	5.2				
	DRY CYCLE								
	5500 cyc			8.3	8.3				
	6000 cyc			9.2	8.8				
	6500 cyc			9.7	9.3				
	7000 cyc			8.5	12.0				
	7500 cyc			9.5	12.0				

AL 0027897 9/7/11

AL 0027897

9/8/82

M-700 TRIGGER / SEAR BLOCK EVALUATION No 4

31/1982

R. Williams

M-700	GMMCAL #6745544	HEADSPACE	FIRING		SAFE (lbs)	TRIGGER	SEAR	SEAR	
			PIN	INCH	ON	OFF	PULL (lbs)	LIFT	ENGAGEMENT
	Sample No. 4								
	START OF TEST	MIN 1002	022		83	54	38	018	034
	LIVE FIRE								
	after 1,000 rds	MIN 1002	022		68	52	40		
	DRY CYCLE								
	500 cyc.				77	77			
	1000 cyc.				78	75			
	1500 cyc.				68	73			
	2,000 cyc.				78	72			
	2500 cyc.				72	77		017	035
	LIVE FIRE								
	after 2,000 rds	MIN 1003	022		73	45	38	0155	035
	DRY CYCLE								
	3000 cyc.				67	87			
	3500 cyc.				75	77			
	4000 cyc.				77	67			
	4500 cyc.				75	77			
	5000 cyc.				77	68		017	036
	LIVE FIRE								
	after 2,500 rds	MIN 1003	022		88	43	43		
	DRY CYCLE								
	5500 cyc.				82	90	45		
	6000 cyc.				73	90	41		
	6500 cyc.				75	93	42		
	7000 cyc.				83	92	43		
	7500 cyc.				87	83	43		

AL 0027898 1084

AL 0027898

1024

M-700 TRIGGER / SEAR BLOCK EVALUATION

15 PUC 110 01077

g. 31, 1982

No. 5

R. Williams

M-700	MMMA #1747525	HEADSPACE	FIRING		SAFE (lbs)		TIMER	SEAR	
			PIN	INDENT	ON	OFF	PULL (lbs)	LIFT	SEAR ENGAGEMENT
	Sample No. 5								
	CONTROL BAR								
1									
2	START OF TEST	Mint 003	.025		5.2	5.2	4.2	.019	.020
3									
4	LIVE FIRE								
5	after 1,000 rds	Mint 003	.025		5.5	5.2	4.0		
6									
7	DRY CYCLE								
8	500 cyc				6.3	7.6			
9	1000 cyc				5.6	8.3			
10	1500 cyc				5.8	7.8			
11	2000 cyc				6.1	8.5			
12	2500 cyc				5.1	8.3		.021	.0205
13									
14	LIVE FIRE								
15	after 2,000 rds	Mint 003	.025		5.5	5.1	4.5	.020	.020
16									
17	DRY CYCLE								
18	3,000 cyc				6.6	8.1			
19	3,500 cyc				6.8	8.1			
20	4,000 cyc				6.1	7.6			
21	4,500 cyc				6.1	7.3			
22	5,000 cyc				6.0	6.5		.020	.020
23									
24									
25	LIVE FIRE								
26	after 2,500 rds th	Mint 003	.025		5.1	4.8	5.0		
27									
28	DRY CYCLE								
29	5,500 cyc				6.1	8.0	4.7		
30	6,000 cyc				6.1	8.0	4.6		
31	6,500 cyc				7.0	8.5	4.6		
32	7,000 cyc				6.8	8.1	4.7		
33	7,500 cyc				6.3	7.6	4.8		
34									
35									
36									
37									
38									
39									
40									

AL 0027899

11/2/82