#2

MEMO: 4-8-81

FROM: A.J. LONG

TO: J.H. HENNINGS

RE: M/700 NEW DESIGN PARTS EVALUATION.

TEST OBJECTIVE: TO Determine degree of reliability of the New Design Bolt Lock, Trigger Block and Weight of Pull Adjust. System supplied for test.

See marked page

REMINGTON ARMS COMPANY, INC.
Firearms Research Division
April 8, 1981

Xc: J.S.Martin
J.R.Snedeker
F.E.Martin
S.A.Fanelli

TO: J. H. HENNINGS

FROM: A. J. LONG

SUBJECT: M700 - NEW DESIGN PARTS EVALUATION

1 Trigger Block on Fire Control
2 Weight of Pull Adjustments
3 Bolt Lock

Date Started: 1-23-81
Date Completed: 2-23-81
Work Order: C 3004 - C 2054

INTRODUCTION

Received from Design five (5) Model 700 rifles with the prototype bolt lock system and new design fire controls for evaluation. All test rifles have the new bolt lock and various changes to the present fire controls incorporating new design parts. A current production M700 rifle was withdrawn from the warehouse for control purposes.

TEST OBJECTIVE

To determine the degree of reliability of the New Design Bolt Lock, Trigger Block and Weight of Pull adjustment system supplied for test.

TEST OBSERVATIONS

Note: All rifles evaluated were subjected to a 100 rd. live fire test followed by a 10,000 cycle cock and fire dry cycle test.

A. Bolt Lock Detented and Non-detented

1. No functional or operational problems were experienced with the non-detented bolt locks during this test. A total of two (2) samples were evaluated.

2. Intermittent function of the detented bolt lock was observed on all three (3) samples evaluated.

Note: Refer to attached sheets for detailed comments on all rifles.

TEST OBSERVATIONS Continued

B. Trigger Block and Weight of Pull Adjustment Screw and Spring

1. One (1) fire control experienced a safety related problem connected with the trigger block. The remaining four (4) fire controls functioned satisfactorily.

2. Two (2) fire controls tested experienced an increase in weight of pull measurements during this test. The remaining fire controls were acceptable.

C. Warehouse Withdrawn Control Rifle

1. No functional or operational problems were encountered with the control rifle during this test.

OBSERVATIONS PER RIFLE AT TEST COMPLETION

Test Gun #1 - Serial No. A6748248 - Non-detented Bolt Lock

a. Trigger bent and deformed at front face.
b. Connector exhibits wear inside of the clearance hole.
c. Bolt lock functioning properly.
d. Nominal wear observed on all parts.

Test Gun #2 - Serial No. A6744869 - Non-detented Bolt Lock

a. Trigger is trapped rearward by trigger block plunger and load exerted by the safety lever.

b. A condition exists when the trigger is pulled and the safety lever is moved to the rear (safe) position, whereupon closing the bolt the rifle will fire when the safety is pushed to the off (fire) position.

c. Bolt Lock is functioning properly.

Test Gun #3 - Serial No. A6744915 - Detented Bolt Lock

a. Cocking cam damaged during testing.

b. Safety operating properly.

c. Bolt Lock functions intermittently.

d. Nominal wear observed on all parts.

Test Gun #4 - Serial No. A6745544 - Detented Bolt Lock

a. Trigger is bent and will bind in the trigger guard.
b. Bolt Lock functions intermittently.
c. Safety operates properly.

Test Gun #5 - Serial No. A6752773 - Detented Bolt Lock

a. Bolt Lock retaining pin loosened while testing.
b. Bolt lock functions intermittently.
c. Safety operates properly.

Control Gun #1 - Serial No. A6747525 - Warehouse Sample

a. Safety operates properly.
b. Nominal wear observed on all parts.

TEST PROCEDURE

1. Headspace, trigger pull and firing pin indent measurements taken on all rifles as received.
2. Fired 100 rds. of mixed 30-06 ammunition thru each rifle in Test Lab shooting jacks.
3. Rifles reviewed by Design.
4. Headspace, trigger pull and firing pin indent measurements taken on all rifles after live fire test.
5. Each rifle dry cycle tested in cock and fire machines for a total of 10,000 cycles.
6. During cycle test, trigger pull and bolt lock function checked every 1,000 cycles.
7. Individual inspection of each rifle conducted at completion of dry cycle test,

DESCRIPTION OF PARTS TESTED

A. Bolt Lock - Two (2) types.
   1. Detented (Allows unloading in "ON" safe condition)
      "Bolt lock will remain in unlocked position when depressed."
   2. Non-detented (Allows unloading in "ON" safe condition)
      "Bolt lock will automatically relatch as bolt is cycled."

DESCRIPTION OF PARTS TESTED Continued

A. 3. Weight of Pull Adjustment Screw & Spring

"If screw is backed out by owner, sufficient spring tension will remain against the trigger to allow satisfactory connection."

4. Trigger Block

"When safety is placed in ON (safe) position, the trigger is blocked and support cannot be removed from under sear/connector surface."

FUTURE WORK

Additional samples of the non-detented bolt lock and weight of pull adjustment screw and trigger block will have to be evaluated.

AJL:T
Research Test Lab

#2

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#3

Report: 12-28-81

Re: M/700 NEW DESIGN SAFETY, NO BOLT LOCK ARM

TEST OBJECTIVE: To determine if the new safety will function satisfactorily without the bolt lock arm.

Tests performed: Dry cycle
Live fire
Drop test

See marked item

3

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington (RM) — Parker (P)

Distribution: C.B. Workman
C.E. Ritchie
J.W. Brooks
D.E. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT – Report No. 812391

M700 NEW DESIGN SAFETY, NO BOLT LOCK ARM

Prepared by: A. Long / F. Supry

Date Prepared: 12-28-81

Proofread and Cleared By:

J.E. Hennings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab — Signature — Date 1-20-82

C.E. Ritchie, Sr. Supervisor - Testing, Mats. & Mech. Analysis Lab — Signature — Date 1/20/82

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington Parker Ford

cc: C.B. Workman
C.E. Ritchie
J.W. Brooks
D.E. Bullis

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
December 28, 1981

TO: J.E. Hennings

FROM: A.J. Long/F.L. Supry

M/700 NEW DESIGN SAFETY, NO BOLT LOCK ARM

Date Started: 9/4/81
Date Completed: 10/6/81
Work Order No.: C-1803

INTRODUCTION

Six M/700 new design safety switches were received from design for evaluation. The evaluation will include dry cycle function, drop test function and live fire function.

TEST OBJECTIVE

To determine if the new safety will function satisfactorily without the bolt lock arm.

TEST OBSERVATION

Five samples were dry cycled 10,000 cycles each, four of the five samples experienced no malfunctions. At 4,000 cycles, sample no. 4 was found to be difficult to operate. It was then disassembled, cleaned, lubricated and reassembled. There were no malfunctions during the remainder of the test.

There were no malfunctions during the live fire tests on the same five samples.

There were no failures during the drop testing, which was conducted on two of the five samples and on the sample that had no dry cycles or live fire rounds. One standard production M/700 was included as a control rifle.

A photograph comparing the current design to the new design is included in this report.

DRY CYCLE

Five of the six samples were assembled into Model 700 actions, after the sear lift and engagement were determined to be satisfactory by assembly. Ten thousand (10,000) cycles were conducted on each sample on a safe on-off dry cycle machine.

The trigger pull and safe on-off forces were measured at the start of the dry cycle and at 1,000 round intervals during the test. The sear engagement and sear lift were also measured at the completion of the dry cycle testing.

TEST RESULTS (For individual test results refer to Data Sheet No. 1).

After 10,000 Dry Cycles:

- Sear engagement showed no change.
- Sear lift showed an average decrease of .0004" FULL, and an average INCREASE of .001" NULL.
- Trigger pull showed an overall increase of 0.25 lbs.
- Safe "on" forces showed an overall decrease of 2.0 lbs.
- Safe "off" forces showed an overall decrease of 2.25 lbs.
- There were no failures or breakages.

LIVE FIRE

The five samples with 10,000 dry cycles were assembled in M/700 30.06 caliber actions; and 500 rounds of R30065 (180 gr. pointed soft point core-lokt) were fired thru each action.

TEST RESULTS

There were no breakage or failures.

DROP TEST

Three of the M/700 design change fire controls (2 with 10,000 dry cycles and 500 live rounds, one as received from design) and one current production M/700 fire control were assembled in M/700 30.06 cal. actions; and a drop test was conducted.

Each of the rifles were dropped from 4 feet onto a solid neoprene rubber mat, and from 2 feet onto a solid maple plank.

- At each distance the rifles were dropped in four different positions:
  a) muzzle first
  b) butt first
  c) top first
  d) bottom first

- The actions were closed on a copper crusher placed in a holder in the chamber.

- The safety was in the "on" position in the 4 foot drops, and in the "off" position in the two foot drops.

TEST RESULTS

- The position of the safety was not affected by the drops.

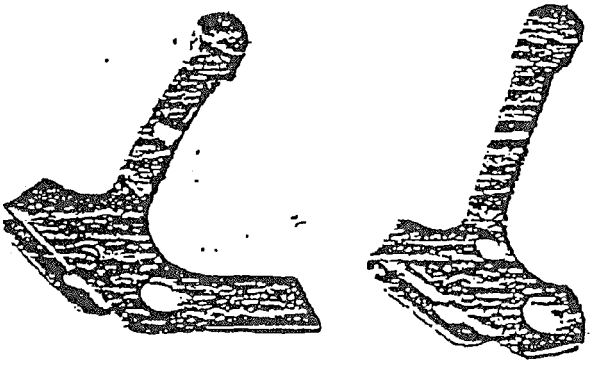
- The rifle did not fire during the test.

- The copper crusher was not indented during the test.

- There was no difference noticed in the results of this test between the new design and the current design fire controls.

Firearms Research Division
AL/FS:m
Attachments

MODEL 700 SAFETY NEW DESIGN TEST



CURRENT NEW DESIGN

10/15/81