

cc: W.E. Leek
E. F. Barrett

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



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Ilion, New York
June 25, 1975

TO: A. A. HUGICK

FROM: W.A. WARREN, Jr. *WAW*

M/700 FIRING PIN ASSEMBLY
IMPACT TEST

INTRODUCTION

A test was requested to determine the effects of a sharp blow applied to the firing pin assembly. Gun motion was specified. The complete rifle was dropped, guided via a four point parallel suspension, into a massive steel bar. The bar applied the acquired gun kinetic energy to the rear face of the firing pin head. The vertical drop height was varied from 6 inches to 36 inches, in 6 inch increments.

TEST OBJECTIVES

1. Determine the effects of abusive impact loading of the firing pin assembly and related components.
2. Interpret the results.

SUMMARY

The test gun did remain safely cocked at impact at all drop heights.

The safety assembly remained in the "S" (safe) position at impact at all drop heights.

At all but the extreme two drop heights, the gun, after clearing, remained operational.

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CONCLUSIONS

The M/700 will sustain a substantial direct blow to the protruding rear face of the firing pin head. The firing pin assembly remains cocked after such abuse. The safety assembly remains in the "S" position.

There appear to be two approximate drop height thresholds at which significant performance transitions occur. Up through the 12 inch drop height, part damage is minimal. Subsequent gun operation is unimpaired.

Between 12 and 18 inches, deformation becomes more pronounced. Manual release of the safety assembly to "F" position, after the drop, becomes very difficult. The firing pin assembly will not remain cocked as the safety is forced into "F" position. After clearing in this manner, the gun is operational.

Between 24 inches and 30 inches, the gun is rendered inoperative by this abuse.

The forces generated upon impact are sequentially transmitted through adjacent parts - at their mutual contact surfaces. This produces localized deformation nicking or cracking.

The eventual cause of gun disablement was bolt plug deformation. The bolt plug bends (in the vertical plane). This causes the firing pin to bind on it. This reduces available firing pin kinetic energy. It eventually prevents any firing pin motion.

One potential improvement might be realized by altering the path by which an impact is dissipated. The purpose of such a modification would be to redirect the impact forces through more massive components.

This approach can be tried by increasing the rearward length of the bolt plug-such that it extends beyond the rear face of the firing pin head. Then, a blow would be transmitted from bolt plug to bolt assembly to receiver. This should direct the impact forces away from the firing pin assembly and trigger assembly components.

The bolt plug length increase required is less than 1/8 inch.

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RECOMMENDATION

It is recommended that lengthened bolt plugs be fabricated and tested in the same manner. A minimum of one dozen is suggested.

If results are favorable, then other aspects of this modification should be reviewed. These would include cost, aesthetics, assembly fixturing, retrofit, etc.

RESULTS

The following qualitative terms are used to describe the relative visual damage which occurred. These terms are valid only in this relative content. They do not necessarily characterize the part with respect to any functional impairment.

None
Very minor
Minor
Moderate
Severe

These four (4) parts were found to be affected by this type of abuse:

1. Firing Pin Head
2. Sear
3. Bolt Plug
4. Safety Assembly