

**710 Dry Cycle**  
**6/7/00**  
**Brian Rages**

**PURPOSE**

This report covers a dry cycle test of the 710 bolt / firing pin / fire control to 5000 cycles as requested by Test Lab Work Request # TLW 0010AE.

**PROCEDURE**

The procedure outlined in TLW 0010AE was followed. A Model 700 dry cycle fixture was modified to cycle the Model 710. Two guns were selected for testing: a Model 700 bearing serial number E6327227 and a Model 710 test gun marked "A15" and bearing the serial number XC1130. Both guns were not new. The Model 710 had already been fired 301 times. The barrels on each gun were cut to about three inches and the stocks were removed. The actions were each cycled repetitively to 5000 rounds. At each 1000 round level, headspace was checked, trigger engagement was measured using the Microvue equipment, and pictures were taken of four critical wear areas. The guns were cleaned and lubricated at each 1000 round level, and then pictures were retaken of the parts after cleaning.

Comment [SRF1]:

**RESULTS**

One part failure occurred on the Model 710. When the gun was disassembled after 2000 rounds, the bolt assembly pin was found broken in half. The pin was replaced, and the replaced pin was found broken when the gun was disassembled at 4000 rounds. The pin was again replaced. When the gun was disassembled after 5000 rounds, cracks were developing on the bolt assembly pin.

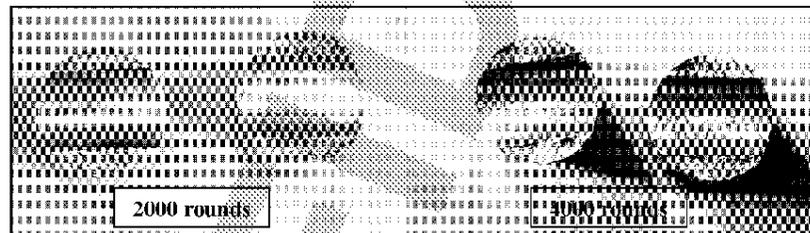


Figure 1. Fracture surfaces of bolt assembly pins.

Table 1 contains the measured values of headspace and trigger engagement.

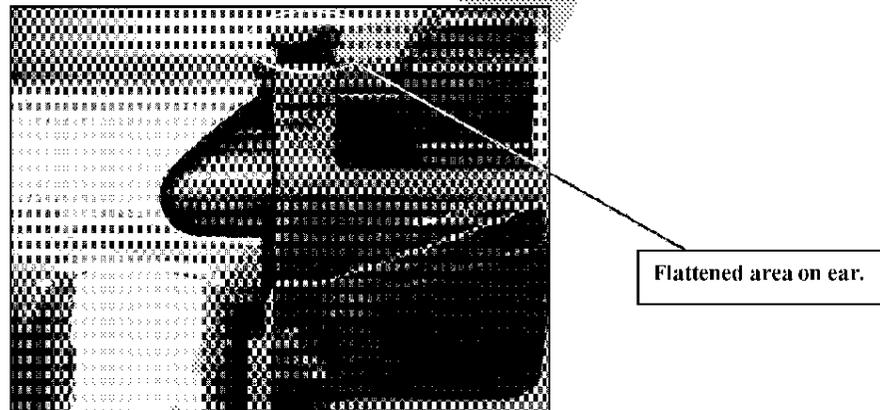
<i>Cycles</i>	<i>Headspace (in)</i>		<i>Engagement (in)</i>	
	<i>710</i>	<i>700</i>	<i>710</i>	<i>700</i>
<b>0</b>	min	+0.007	0.0210	0.0164
<b>1000</b>	min	+0.008	0.0212	0.0166
<b>2000</b>	min	+0.008	0.0217	0.0172
<b>3000</b>	+0.001	+0.008	0.0234	0.0180
<b>4000</b>	+0.001	+0.008	0.0216	0.0181
<b>5000</b>	+0.001	+0.008	0.0209	0.0181

**Table 1. Measured Headspace and Trigger Engagement.**

Headspace grew by about 0.001 inch in each gun. In the Model 700, trigger engagement grew steadily, increasing 0.0017 inches over the duration of the test. Trigger engagement in the 710 varied more erratically. The maximum engagement measurement differed from the minimum value by 0.0025 inches, however at no time did it fall below the .020 inch minimum specification.

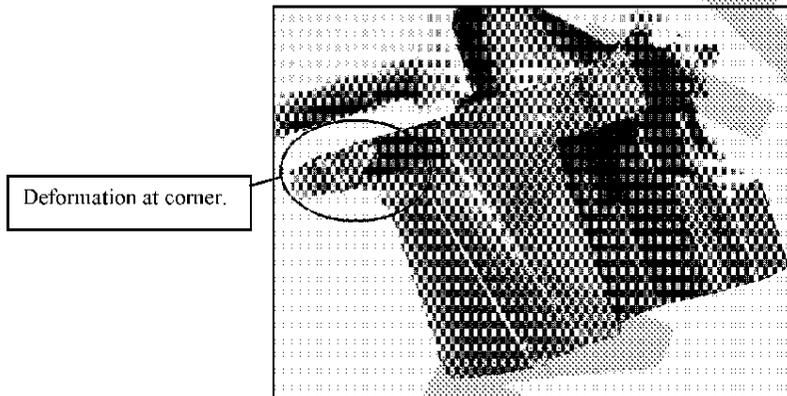
Pictures were taken of four areas in both guns: the firing pin head, the cam surface used to cock the firing pin head, the bolt lugs and the sear.

Two areas of the plastic bolt plug on the 710 showed noticeable wear. The non-bolt-side firing pin head ear displayed considerable flattening. This can be seen in Figure 2.



**Figure 2. Deformed area on 710 bolt plug.**

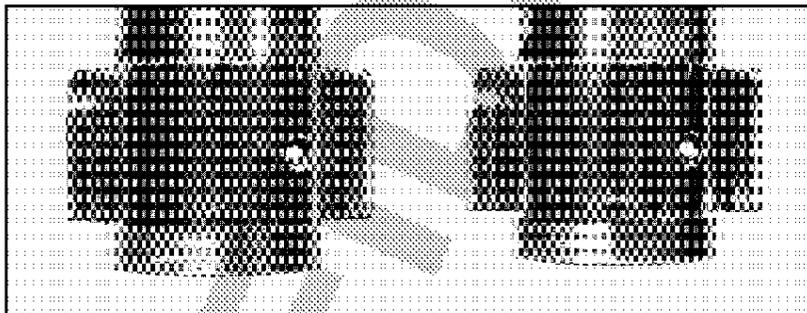
Deformation of the plastic bolt plug also occurred at the bolt-side front corner. This area of deformation may be seen in Figure 3.



**Figure 3. Dcformation at corner of 710 bolt plug.**

No areas of remarkable wear could be found on the Model 710 receiver insert.

Very little wear was seen to occur on the bolt heads of either gun. Figure 4 contains pictures of the 700 bolt lugs before and after the test. The amount of wear shown in the before and after pictures are almost identical.



**Figure 4. 700 bolt lugs, before test (left) and after 5000 rounds (right).**

Figure 5 contains pictures of the Model 710 bolt lugs before and after the test. Only a slight amount of wear can be seen between the before and after pictures.

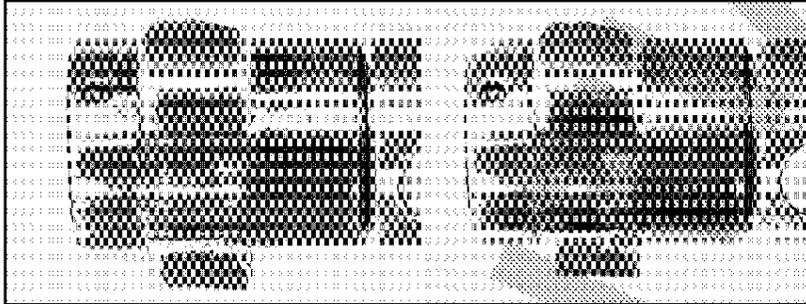


Figure 5. 710 bolt lugs, before test (left) and after 5000 rounds (right).