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2-21-63

4. Receiver - distance from centerline to fire control holes - OK.
5. Firing pin head - dimension from centerline to bottom of sear contact area - .4355. OK.

The old sear housing assembly was replaced with a new one. The sear in the new assembly was inspected to insure that it was flat over its entire sear block contact area and that the contact line was sharp. All follow down or jar off characteristics previously experienced were eliminated, and the gun was found to be completely safe.

Attached to this letter you will find two sketches illustrating how the condition of a sear at contact with the sear block influences the safety characteristics of the XP-100 fire control.

Figure 1 - illustrates the correct relative location of parts when the gun is cocked and ready to fire. The lower portion of Figure 1 represents the sear block showing all external forces in their correct positions and directions. Note that all forces acting on the sear block either tend to cause rotation in a counterclockwise direction or stabilize rotation, thus tending to keep the sear block under the sear. In order to rotate the sear block in a clockwise direction, thus releasing the sear, a force must be applied by the trigger link as shown by the dotted line.

The upper diagram shows that the safety, when rotated counterclockwise, lifts the safety cam upward. This condition relieves the sear block of the load applied by the sear, thus the fire control is locked "on safe".

Figure 2 - illustrates the location of parts if the sear is not correctly shaped at the sear-sear block contact area. The sear in this diagram has been "dubbed" over at the sear block contact area.

Note that the sear and safety cam are allowed to rotate downward from their normal position. The firing pin head-sear contact surface has been markedly decreased. The safety cannot lift the safety cam properly since their contact will be direct rather than a cam action.

The lower diagram shows the forces applied to the sear block under these conditions. Note that the force applied by the sear tends to