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M/40X BOLT

During the assembly and testing of a M/40X International sample rifle for the Air Corps it was found that vertical groups were obtained on the target and the rifle could not be brought into specs by the usual methods of repair. When checks of the firing pin indent in the copper crusher were made it was found that the indent varied from .016" to .019" in depth. On examining the bolt it was found that the bolt head was binding the firing pin due to rotational misalignment. Since this problem has existed for some time it was decided to investigate the causes of this misalignment in production. Following is a list of the items investigated:

1. Centrality of the Mill Cut on the Cocking Piece Nose

A few parts were found which showed this cut to be off a small amount. This can contribute to the condition noted.

2. Cocking Cam Cut in the Rear of the Bolt Body

All bolt bodies examined met the gauge. However, a considerable variation existed and it is possible that some of this could be eliminated by a change in the sequence of operations. The cross pin holes for retaining the bolt head are drilled prior to putting in this cam cut. Since the locating point for the cam cut is over the holes, it is possible that burrs could introduce some variation.

3. Position of the Cross Pin Holes

This was not related to the problem at hand but considerable difficulty has been experienced in assembly due to interference of the cross pins and the firing pin head. On checking this drill it was found that the bushings were worn and that one hole was visibly off, apparently due to this wear.