MONTHLY PROGRESS REPORT - June 1978

6-22-78
KWSoucy:T

MODEL 1100 IMPROVEMENTS

Production experienced problems with the lot of 50 spring retained feed latches. The latch would come out when an air wrench was used to tighten stock nuts and also when the final assembler cycled action bars to check for fit. Parts are now in the Model Shop to have projections formed for better retention.

MODEL 1100 WEIGHTED LT-20, 28 & 410 SKEET GUNS

Design work is in progress to match weight and center of gravity to the large frame 20 Ga. gun and also the 410 as requested by Marketing.

We have not yet received feedback from Marketing on their appraisal of the first design (12 Ga. weight and c.g.).

MODEL 1100 WATERFOWL GUNS

Marketing is considering changes to the as-transmitted design. Drawing work will follow when decisions are made on final configuration.

XSG

Due to out of tolerance conditions, gas system orifice holes had to be opened up to .110 to achieve proper bolt velocities. After a 1,000 round magnum test the gun was used for gas system experimentation. A .093 dia. leading orifice hole was added to affect better sealing by using the high pressure gas itself to prevent blowby. Sealing was improved as evidenced by a 30 in/sec increase in bolt velocity. New gas system components are in the Model Shop. We are also continuing experiments on an injection moldable piston. Two pistons of Du Pont

Vespel SP-1 are being made in the Model Shop and will be tested on a standard M/1100.

Magnum shooting of the A3 resulted in cracks on the cam webs on both the slide block and locking block. This problem appears easily correctible by a geometry change to reduce stress raiser effects. Design of these parts has been changed accordingly and will be sent to the Model Shop the week of 6-25-78.

An order has been placed for low resilience urethane receiver buffers and for action spring with set removed.

MODEL 870 ALL GA. WOOD COSMETICS

Layout work for the new checkering patterns is under way.

MODEL 3200 SKEET SET

No Research activity.

MODELS 7400 - 7600

Rebound bolt velocity has been demonstrated to be a factor in the malfunction rate of these guns. Bolt velocity testing with and without the buffer has shown that deleting the buffer reduces rebound velocity and approximately doubles the total elapsed time between uncovering the feeding shell with the breech bolt and picking it up again to push it into the chamber. In a three gun field function test the overall malfunction rate dropped from 14% with the buffer to 3.1% without. Tests to determine the possible decrease in endurance life of action bars and other components due to deletion of the buffer are in progress. Buffer material is now Hytrel 5555. Measurements with lower resilience

Hytrel 6346 showed no appreciable improvement. Buffers of a low resilience urethane compound have been ordered.

Extensive dry cycle work was performed on two 7600's. One was run to 52,000 cycles with no significant problems being seen. The other was cycled to 23,000 at which time the small diameter rear shank of the breech bolt broke off. The gun was fitted with another bolt and cycled an additional 35,000 rounds. This bolt broke at the same location. Since the design life of this gun is 3,000 rounds and the breakage was fail safe (the gun cannot be fired) this is not considered to be a problem. These guns had the new design firing pin and hammer, and there were no problems with these parts.

Cracked barrel extensions have been seen in four endurance guns. Two guns were modified to include a radius in the high stress area. One gun is at 3,000 rounds with no problems. This gun is also being used to check action bar life with no buffer.

Two guns are being shot and bolt velocities monitored every 500 rounds to determine the cause or causes of bolt velocity increase.

New receiver inserts have been received from the vendor. They show no soft spots that caused receiver damage in two endurance guns. Dimensional control is also improved, resulting in easier assembly.

Action springs in endurance guns take a set of approximately 1 inch during the first 1,000 rounds and thereafter stabilize. A 1 inch set is typical of that seen on standard 742's and is not considered to be a problem.

An intentional primer blanking test was run to determine the ability of the new hammer to sustain this type of abuse. The gun was subjected to 36 blanked primers with proof ammo. Total bend of the hammer was approximately .010. Preplay was not seriously affected and no unsafe conditions resulted.

Parts are being prepared in the Model Shop to determine the effects on firing pin endurance life of a maximum diameter firing pin and minimum diameter breech bolt hole.

Redesigned magazine boxes and followers have been ordered from their respective vendors.

Seven high speed movies have been shot and are being analyzed in an effort to identify causes of malfunctions.

KWS:T
6-22-78