

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

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"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Ilion, New York
August 29, 1975

TO: W. E. LEEK

FROM: J. P. LINDE

STATUS OF DESIGN WORK
MANUAL FIREARMS DESIGN

MODEL 3200

Cost Reduction and Product Improvement Items

1. Trigger Feel - A large number of guns were being rejected for trigger creep at final inspection. A program was instituted which solved the problem by stoning the hammer notches in a fixture and form grinding the sear notch. The tooling has been ordered which will allow production to form grind both sear and hammer notches in the future. A gage is being assembled which will allow a trace to be made of the trigger pull characteristics of any gun.
2. Stock and Fore End Breakage - High speed movies were taken of the stock when the gun was fired, with magnum rounds. No abnormal conditions were shown. The stock breakage problem will be approached from four areas:
 - 1) A cross bolt will be tried through the tang section
 - 2) A stock with a thicker grip section will be made
 - 3) Stock loads will be generated so a complete loading diagram can be developed
 - 4) A fiberglass netting will be tried in the back end of the stock inletting cut.

To stop the breakage on the fore end, the fore end iron - fore end plate joint will be strengthened.
3. Recoil Pad - A new recoil pad will be developed so the recoil pad never has to be removed from the gun. The recoil pad would have a stock bolt hole through the pad, with a trapped stock bolt.
4. 3" Magnum - The drawings have been released to the Plant. Initial production guns should be ready for point of impact testing in September.
5. Point of Impact - Thirty and thirty-two inch trap barrels have not been shooting to the desired point of impact. A plant study is under way to determine the problem.

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6. Stock Counter - A stock cycle counter should be developed for field test guns which will be supplied to the ammunition plants and the Farms to obtain meaningful test results.

MODEL 3200 ITEMS

1. The bottom tang shoulder screw will be put into production in September.
2. The redesign of moving the top lock lever screw has to be completed. The feasibility of going to a bigger screw also has to be completed.
3. Specifications on top lock fit and opening force have to be completed.
4. Finish design and testing on stamped strut. This would also include changing the trigger adjustment position on to the strut, to get away from debris blocking the trigger. The jaroff height should also be increased to 4 feet.
5. A number of ejectors have been electron beam welded together. These ejectors will be dry cycle tested. If satisfactory, another sample of ejectors will be welded together. A set of ejector blanks are being prepared and will be welded together with the laser beam process.
6. The assembly and inspection sheets will have to be updated to reflect all the alterations.
7. The sear will be laid out to see if one machining operation can be removed.
8. Institute heat treat on frame radius.
9. Check on severity of firing pin hole deformation and tie in with above heat treat.
10. Gene Bullis will be contacted to tie in with Research and Mort Tibblitts on developing a customer repair check list on return guns.
11. Through testing, it has been found that the Imp. Mod. choke is shooting almost as dense a pattern as the full choke. A pattern test is under way to verify this and if so to alter the Imp. Mod. choke to give a more open pattern.
12. A pattern test was conducted in Walt Schimecks' idea of altering the point of impact by altering the choke centerline with respect to the bore. The test showed that the point of impact can indeed be altered by altering the choke centerline.

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13. A number of guns are being repaired for broken main hammer plunger rods. A redesign of this part is being pursued to solve this problem.

Safety Items

1. Hammer notch surface strength.
2. Blown top locks
3. Try to blow up test barrels used on slam test with 12-20 combination.

High Grade

Two high grade guns (one skeet and one trap) are being made. These guns will be completed for the N.S.G.A. show in the first quarter of 1976.

Skeet Sets

Three complete sets have been fabricated and tested. The drawings have been released to production and a plant project submitted for their manufacture.

Lightweights

A total of five guns have been fabricated (two 20 Gauge, one 12 Gauge Lightweight, one 12 Gauge International Skeet and one 12-20 Gauge combination) and are in Research Test. One 20 Gauge experienced problems with the barrel assembly failing on an extended proof round test. It appears to be caused by the barrel hitting the shooting port. The barrel will be strengthened and a model will be fabricated with the heavier wall. The lightweight series have the spring loaded ejection system. Problems have occurred and the system is being perfected.

In light of testing, changes will be made because of the barrel alteration on the monoblock, barrel contour, barrel spacers, rib, and stock drop on skeet guns.

MODELS 600 - 700 - 788 - 580

The fire control alterations have to be written up for the field service manual. The safety checks which should accompany writeup of parts changes also have to be completed. This writeup is a check list for the safe operation of the safety mechanism. The redesign and testing of the M/700 safety has to be completed. The redesign of the 540X and 541S safety mechanism changes have not been transmitted to the Plant. They will be transmitted after a successful change in the 580 and 788 safety mechanism.

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The safety alteration to the M/788, 580 and Mohawk 600 has been completed and is being instituted by Production. Work still has to be done to make the detent more positive on the 580 - 788 series safety. Also, other factors of fire control performance will be looked into, such as trigger side play effects, making the trigger and connector one piece, drop test effects, and misalignment problems.

With the changes in the fire control on the 580s and 788 there is a stock interference which will require an alteration to the stock.

Model 600 - Mini-Carbine

A cost estimate of the M/600 Mini-Carbine is being prepared by Methods & Standards.

Aluminum trigger guards have been received and will be installed on a number of the present model guns.

Model 700 - New Calibers

8mm Remington Magnum - Two pressure barrels and two 700 rifles will be made immediately using the four groove barrels available. The bore and groove diameters will be established and Production will order the needed tooling for 6 groove barrels. The order should be placed in September. The rifles will be tested for accuracy, barrel erosion and stock splitting tendencies.

7x64 - The chamber dimensions for the 7x64 have been received. This would be a new cartridge for the M/700 for foreign sales. One M/700 will be chambered for this cartridge to check its performance with foreign ammunition.

M/700 - 308 Varmint Rifle

Five Varmint rifles will be made by Research for the gun writers seminar in November.

M/700 Silhouette Rifles

Varmint rifles in the M/700 have been made up in the following calibers: 308, 350 Rem. Magn., and 280. Consideration was given to the 7mm Mauser and 308 by 7mm, but they were dropped. The M/700 BDL - 308 Caliber Varmint rifle will be introduced into the line in January 1976. Work will be started to form grind the trigger mechanism parts to give a

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better trigger for silhouette shooting. A M/788 in 308 is being assembled with a custom stock similar to the M/700 Varmint stock. This gun does not have a magazine cut in the receiver for added strength. This gun will give us a good idea of the effects of lock time on silhouette shooting. A 540X action is also being assembled into a better stock for comparison testing.

M/700 Scope Mount Problems

The scope blocks will not line up properly on some Model 700 rifles. The problem appears to be that of the heat treating deforming the receiver. To remedy the situation it might be possible to machine the rear surface at a different time or from a different reference point. This problem will be looked into.

M/700 Muzzle Deformation

We are still receiving guns from the field with the muzzle lands being deformed causing poor accuracy. This problem will have to be resolved one hundred percent to insure the best accuracy of our guns.

M/700 Future Program

The future 700 safety plans call for a new safety mechanism which will permit the shooter to unload his gun while the gun is in the safe position. Making the sear out of formed bar stock instead of powder metal will be investigated, along with the improved bolt plug, cocking indicator and detachable box magazine.

Model 788

An investigation will be started as to the feasibility of altering the material in the firing pin head from powder metal to formed bar stock. All of the bolt handle alterations have been transmitted to the Plant.

Model 581 Single Shot

A design is being developed to adapt the 581 clip fed gun to a single shot. This design would have a plastic loading ramp and magazine filler piece which could be removed at a later date if the customer prefers to have a repeater.

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Model 540X

The receiver sight holes on the 540X have to be checked to see if they line up with gun or if they are canted with respect to the gun. This was a customer complaint at Camp Perry. There were also complaints of breaking the bolt stop on the 540X. This will be looked into.

MODEL 40XC

A problem has appeared on the 40XC on feeding shells with the new stock configuration. A new design for the magazine spring will be looked into.

MODEL 40XR RF SPORTER

This model is experiencing feeding problems and work is needed to remedy the situation.

TRAP PROGRAM

Mechanical Trap - Work is continuing on the development of the mechanical trap to meet the constraints of cost, function, endurance and safety. A trap development program is being formulated so the design objective will tie in with the Marketing announcement objective.

Skeet & Tournament 4100 - A new field service manual is being prepared for the 4100 Tournament Trap. A similar manual will be made for the Skeet Trap.

Work is continuing on why there is chatter in the cocking clutch on the 4100 Series. Also, the problem of the throwing arm cycling through is being investigated.

JOBS TO BE COMPLETED BY TEST LAB

1. Measure hammer notch load and check deformation.
2. Test M/700 barrel bracket to determine if it takes a permanent set.
3. Test M/3200 in 12-20 condition.

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4. Pattern test of Imp. Mod. and Full chokes.
5. Development of stock cycle counter.
6. Endurance trap gun.
7. Instrument recoil reduction.
8. Instrument stock for breakage problems.

CURRENT PRODUCTION PROBLEMS

Research personnel are tying in with Production on helping to alleviate the costly stock and fore end fitting problems, and point of impact problems.

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SINGLE BARREL TRAP GUN

Two Model 3200 single barrel trap guns have been assembled. One gun has an adjustable rib and recoil reduction system. The other gun has just the recoil reduction system. Neither gun has the screw on choke. The model gun with rib and recoil reduction will be shot at trap in competition with the leading trap guns. The Ithaca Century II has been ordered to complete our list of competitive trap guns. Three more model guns with all features (recoil reduction, screw on choke, and adjustable rib) are being designed and fabricated. These model guns will be used in the Marketing Field Test in November.

Recoil Reduction System

A total of 5,000 rounds have been fired through one model gun. The recoil reduction system functioned over the 5,000 rounds with no plastic build up or fouling. The only detrimental factor was the residue build up in the fore-end assembly. The brazed orifice block between the barrels shows no signs of cracking. The model guns will continue to be endurance tested with trap loads. The system will be monitored in the measurement lab to obtain the greatest possible recoil reduction. The system inertia weight will be changed from the lead filled assembly to a solid steel piston.

Adjustable Vent Rib

One model gun with the adjustable rib has been assembled. The rib adjusts with a screw driver from the back with the barrel assembly open. The current design has too much slack in the rib adjustment mechanism. The front block at the end of the gas system is pulling away from the barrel and it too will be redesigned. The system adjusts readily with no drag as experienced on previous models. One more adjustable rib will be fabricated before the three model gun ribs are fabricated.

Screw On Choke

The design of the screw on choke has been settled on and the drawings are being made. This choke tube will screw on external threads on the barrel and be reamed and choked with the barrel. This design will give the shooter a choice of two chokes, a modified and full.

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