

cc: E.S. McCawley

June 9, 1964

Mr. Ken Warner
Rt. 1 - Box 96
Sarasota, Florida

Dear Mr. Warner:

I am in receipt of a letter you had written to Ted McCawley and also your note concerning some information required for an article involving the Remington Model 600 Rifle. I believe I have accumulated all the necessary information for you and will start by answering your questions as they occur in your letter.

By this time you have probably received the stock, which I hope meets with your approval. On our scales it weighs one pound eleven ounces. I chose that weight stock because it represents an average of ten which we had weighed originally, ranging in weights from one pound five ounces to one pound fifteen ounces. This stock coupled with a 308 Caliber M/600 should weigh at 5 lbs. 8 oz., the advertised specification. As you probably realize, we are making this rifle in four calibers, the 308 Win., 222 Rem., 35 Rem. and 6MM. They all vary in weights because of the bore size of the barrel, the 35 Rem. being the lightest, averaging around 5 lbs. 6 oz., and the 222 being the heaviest, averaging around 5 lbs. 12 oz.. That is, when we are comparing the average weight of 1 lb. 11 oz. of the stock with the actions. The actions only weigh 3 lbs. 13 oz. for the 308, 4 lbs. 1 oz. for the 222, and 3 lbs. 11 oz. for the 35 Rem. At the present time I haven't been able to get enough 6MMs all in one group to weigh them and determine their actual average. But I suspect this will suffice for your purposes.

As to the elements affecting weight reduction, the action itself was the greatest contributor because the barrel was reduced in length to approximately 18 1/2" and the receiver was reduced 3/4" under the shortest of our higher powered actions, in the Model 700. If you recall, the original Model 721 had two receiver sizes. We called it the M/721 and M/722, and they were approximately 3/4" different in length. This particular action is another 3/4" shorter than the M/722. At the same time when reducing the receiver the associated parts such as the bolt could be reduced in length, and therefore some weight saving was obtained in that part, along with the firing pin, firing pin retractor spring. A couple of modernistic cuts were placed upon the rear section of the receiver and the bolt plug, but the weight reduction accumulated in these areas was very small indeed, and the intent was not in the direction of weight reduction but more for a styling effect.

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The barrel itself is rather husky in nature, especially in the breech section as you will note, and this was necessary for heavier caliber designs such as those involving the 35's.

One would expect the nylon trigger guard to contribute to weight reduction, and it does --- nylon weighing approximately one third that of aluminum, and aluminum roughly one third that of steel. This particular shape and design of the trigger guard, which is I believe original and a Remington style, has been found to be very rugged structurally and the nylon was most adaptable of all types of materials for this part. The nylon rib, we felt, added some aesthetic appeal to the rifle and made it more distinctive, setting it aside from others. It is floating on studs which are welded to the top of the barrel, the welding being at such a rapid rate that it does not effect the internal dimensions of the bore. The rib itself contains elongated slots which allow the rib to float, as I said previously, on the studs, and has no effect on the accuracy of the barrel, and will withstand high temperatures from rapid shooting generated into the barrel.

The rear sight and the front sight are mounted directly to the studs; therefore giving the utmost in accuracy by that direct mounting. This particular assembly is not unlike the XP-100 Pistol which was introduced ahead of the Model 600, and very intensive accuracy tests were conducted in both the rifle and the pistol to determine the effects of the rib on the barrel, and there were none whatever. As far as the ballistics are concerned, most ammunition charts list velocities and energies that have been obtained in 24" barrels. The particular pamphlet put out by Remington with their average ballistics in the 308 Caliber has been accomplished by using a 24" barrel. So I will list for you the results we obtained in actual measurement 3 feet from the muzzle using 180 grain bullets in 308 Caliber, in the Model 600, with an 18 1/2" barrel. The velocity was 2465 fps. In the Model 700, the same caliber, 20" barrel - velocity was 2525 fps. And in a pressure gun, the same caliber, 24" barrel - velocity was 2567 fps. So you can see the drop in velocity is rather insignificant when it comes to the compromise situation that a hunter or shooter must consider when weight or barrel length is involved. And the effect on game, for example, between the results on the Model 600 and the pressure gun, involving only 100 fps drop, would probably be immeasurable.

We determine the effect on shoulders by what we call shoulder force measurements, and have made two measurements for you, one on the Model 600 and the Model 700, weighing 5 1/2 lbs. and 6 1/4 lbs. respectively. We found that the shoulder force on the M/600 was 585 lbs., and on the M/700 was 415 lbs. I don't know whether this information pertaining to shoulder force is adequate for your needs, but if you need anything further in computations or measurements, please advise. This also applies to other information you might need pertaining to the gun.

With regard to your questions concerning the shorter barrel, of course we must stay within the limits of the Federal laws, which I believe is around 18", and we have

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intended to make our barrels just slightly longer than the minimum legal limits so there will be no question about barrel lengths. The only really short barrel we ever made on these rifles was to compare 221 velocity versus the 222 by cutting off the barrels an inch at a time. And we did have one M/600 made up with a Mannlicher type stock which I think had a very pleasing appearance indeed. However, this requires longer stock blanks and very close manufacturing control for bedding, and other factors are involved along with the problem of unfortunately low sales appeal for Mannlicher stocks. I would not be surprised, however, to see some of the stock companies place Mannlicher stock blanks on the market for the Model 600.

I expect there have been several comments across the country about the timing of the Model 600 versus the XP-100 as to which model was created first, was introduced first, etc.. I can assure you that this was considered and that Remington kept within the limits of the law. The truth of the matter is that the XP-100 was conceived first, and all of the drawings and the models were made up and designated as pistols, and the items used in the receiver section were not originally involved with any rifle actions. As you probably know, the receiver section of the gun is the legal portion which is the gun, and the other parts are the accessories and appurtenances necessary to make it function. That is one of the reasons why the serial numbers are always placed on the receiver sections, since that is the basic gun. The original XP-100 design was made available to the Treasury Department for their ruling and approval before this item was placed upon the market, and the Model 600 was introduced one year later. The law states that it is illegal to convert rifles and shotguns into pistols, but it is not illegal to reverse this procedure, and therefore we have met the legal requirements by conceiving, designing and introducing this particular combination in the pistol first, prior to the introduction of the Model 600.

I trust this information will be adequate for your needs in your forthcoming article in POPULAR SCIENCE, and if there is anything further I can do to aid you in supplying information for your articles or for your general information please do not hesitate to write again. It has been nice corresponding with you, Ken, and I'm looking forward to further correspondence in the future.

Respectfully,

W. E. Leek
Firearms Design & Development
Ilion Research Division

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