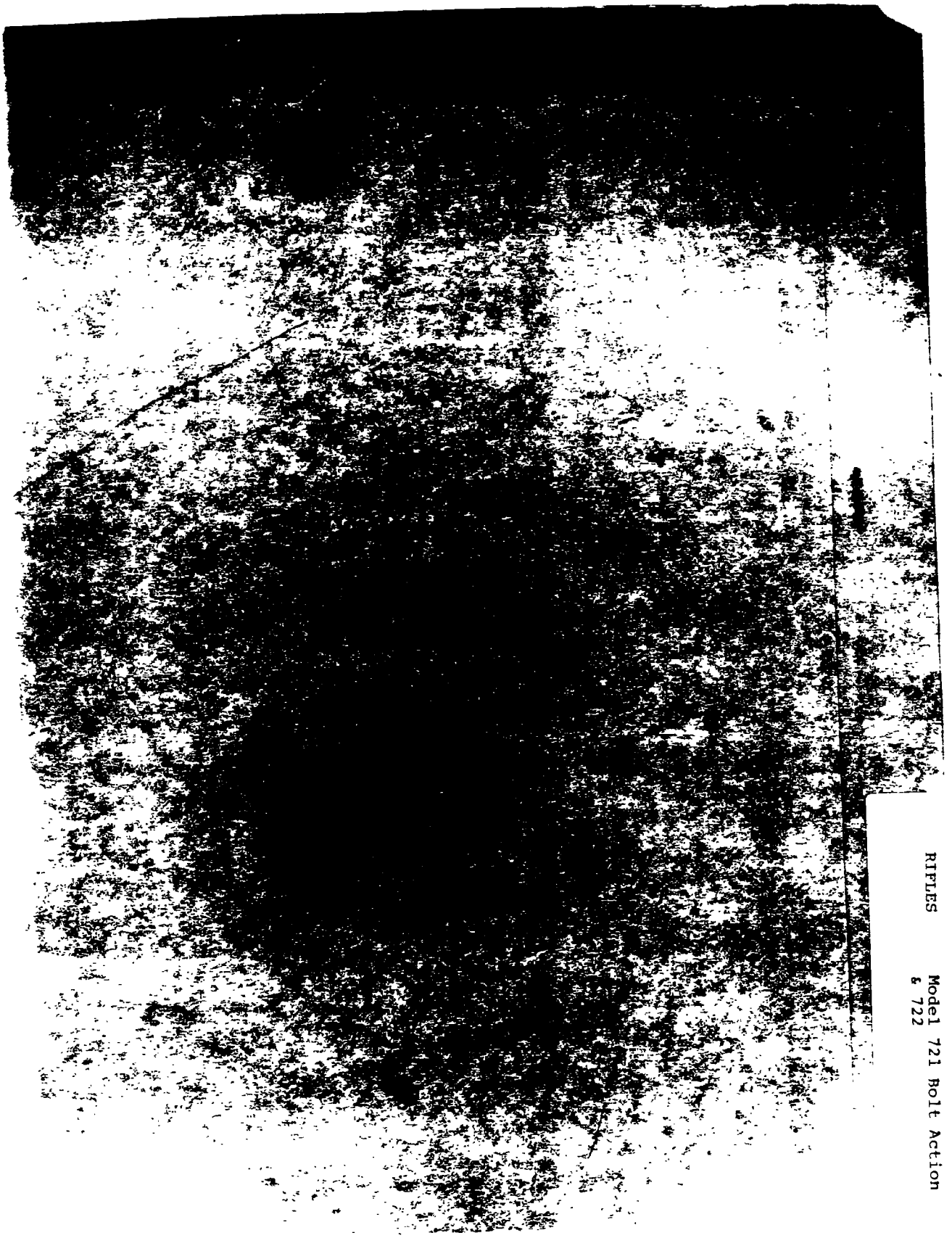

RIFLES Model 721 Bolt Action & 722

CENTER-FIRE RIFLES

MODEL	Introduced	SHIPMENT BY YEARS 1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Total Shipments	Date Discontinued	Total Life of Model	
721	1948 1/2	104	27556	32939	37266	39948	40664	35811	7778	8716	10438	7783	4568	5656	5303	5939	520	---	270,989	1/2/62	14	Yrs.
722	1948 1/2	--	4778	11191	17216	23541	20479	18614	6241	13502	10522	6242	5231	4485	4566	3733	595	---	150,936	"	14	Yrs.
760	1952 2/6					92	63735	81428	85064	80099	23110	20766	15313	17237	24633	17933	8326	11092	404,028		12	Yrs.
740	1954 12/23							15	675	97620	50143	45224	25669	31144	886	878	2		252,276	1/6/60	5	Yrs.
725	1958 1/3											6	6367	4019	3311	2781	151		16,635	1/2/62	4	Yrs.
742	1960 1/6														32205	31410	25127	31032	120,774		4	Yrs.
700	1962 1/10																1099	41087	83,886		2	Yrs.
XP-100	1963 3/6																13	5527	5,527		1	Yr.
500	1963 12/6																	100	100		1	Yr.

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BARBER - PRESALE R 0126050

			1955	1956	1957	1958	1959	1960	1961	1962
721	30/06	A-LO	2648	2929	2291	679	1	-	7	-
	30/06	ADL-LO (Comb Stock)	5	17	37	2				
	30/06	A-HI	2655	3633	2348	492	1	1		
	30/06	ADL-HI	57	104	125	5				
	30/06	BDL-HI	42	40	31	7				
	30/06	A (All Purp. Stock)			1	1618	3747	3160	3127	[redacted]
	30/06	Action only				8	7		2	
721	270	A-LO	1324	1200	1078	287				
	270	ADL-LO	3	8	16		1	9		
	270	A-HI	1335	1799	1100	337	2			
	270	ADL-HI	43	51	81	7		7		
	270	BDL-HI	39	25	22	3				
	270	A (All Purp. Stock)				643	1360	1294	1394	[redacted]
	270	Action only				7	12			
721	280	A						403	172	[redacted]
721	300 Mag	A-Lo	309	267	227	39				
	300 Mag	ADL-LO	4	8	9	1				
	300 Mag	A-HI	215	321	345	58				
	300 Mag	ADL-HI	9	20	52	7				
	300 Mag	BDL-HI	28	14	20	2				
	300 Mag	A (All Purp. Stock)				360	515	428	304	[redacted]
	300 Mag	Action only				6	9	1	2	
721	264 Mag	A							931	[redacted]
721	All Cal.	-D		1						
	All Cal.	-F								
	Not in present gun line			1						
	Total M/721		8716	10438	7783	4568	5656	5303	5939	[redacted]
722	308	A-LO	888	402	370	264	86			
	308	ADL-LO			3					
	308	A-HI	1250	408	316	238	76			
	308	ADL-HI	35	3	66	4	1	4		
	308	BDL-HI	12	4	8	2		7		
	308	A (All Purp. Stock)				3	489	613	547	[redacted]
	308	Action only					12			

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C

			1955	1956	1957	1958	1959	1960	1961	1962
722	300 Sav.	A-10	99	61	48	17	27	2		
	300 Sav.	ADL-LO	2							
	300 Sav.	A-H1	41	27	24	16	6			
	300 Sav.	ADL-H1	1	3	3					
	300 Sav.	BDL-H1	6	3						
722	257	A-LO	708	413	221	122	1	5		
	257	ADL-LO	5	1	3	2				
	257	A-H1	955	696	338	226				
	257	ADL-H1	25	7	18	1				
	257	BDL-H1	23	9	6	1				
	257	A (All Purp.Stock)				20	380	67		
	257	Action only.					8			
722	244	A-H1	4240	4119	1344	599	408	3		
	244	ADL-H1	143	150	71	21	2	12		
	244	BDL-H1	66	125	53	1				
	244	A (All Purp.Stock)				2	262	458	23	1
	244	Action only				15	22			
722	222	A-H1	4755	3888	3164	654				
	222	ADL-H1	83	91	104	23	1			
	222	BDL-H1	165	111	80	7				
	222	A (All Purp.Stock)				1101	1921	1807	1489	470
	222	Action only				4	34			
722	222	Mag. -A				1887	725	540	574	42
	222	Mag -Action only				11	24			
722	243	A						1048	1100	38
722	Not in Present Line			1	2					
	Total M/722		13502	10522	6242	5231	4485	4566	3733	595
	Total M/721 & 722		22218	20960	13925	9799	10141	9869	9672	1115

1956 through 1961

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R2527039

Model 722 - C.F. Bolt action (Short Action)
Model 721 - C.F. Bolt action
Rifle - (Long action)

Introduced 1948 - First Production late 1947
Discontinued 1962 - Replaced by model 700
Same block of serial numbers shared with the short action model 722.
First serial number 1100. Lower numbers were Model Test Rifles.

Year	Prod. 721-722	Road Serial Nos at end of yr.	
START	1947	104	1204
	1948 - 32,334	- 33,538	
	1949 - 44,130	- 77,668	
	1950 - 54,482	- 132,150	← .222 start Caliber
	1951 - 63,489	- 195,639	
	1952 - 61,143	- 256,781	
	1953 - 54,425	- 311,206	
	1954 - 14,019	- 325,225	
	1955 - 22,218	- 347,443	
	1956 - 20,960	- 368,393	
.222 Rem. Magnum	1957 - 14,075	- 382,468	(new Block Started at 400,000)
	1958 - 9,799	- 392,267	
	1959 - 10,141	- 402,358	
	1960 - 9,869	- 412,227	
	1961 - 9,672	- 421,899	
STOP	1962 - 1,115	- 423,014	End.

MISCELLANEOUS RIFLE INFORMATION

MODEL 722

YEAR OF MANUFACTURE - M/722 - BY SERIAL

MARCH	1950	111,000
	1951	200,000
JULY	1952	245,000
	1953	290,000
OCT.	1955	371,000
FEB.	1956	378,000
OCT.	1957	410,000

NEW SIGHT LINE JAN. 1958

30-06)	
270)	
300 MAG.)	
308)	AFTER #412,300
257)	
244)	
222)	
243 1-60)	
300 SAV.)	NEVER IN N/S

NOTES:

M/721 - 722 - SAME GUN - 721 LONG ACTIONS
- 722 SHORT ACTIONS
(300 SAV., .244 R, .257 ROB, .222R, .222 R MAG., .243 W)

SHIPMENT RELEASES

Models	37	721	722	725
	605	-	-	-
	258	39948	23541	-
	829	40664	20479	-
	648	35811	18614	-
	242	7778	6241	-
	45	8716	13502	-
	1842	10438	10522	-
	1339	7783	6242	6
	5145	4568	5231	6367
	2502	5656	4485	4019
	3948	5303	4566	3311
17,903		5939	3733	2781
		520	595	151
-	173,124		117,751	16,635
-	-		-	-
-	-		-	-
-	-		-	-

MODEL - 721 Rifle

YEAR OF MANUFACTURE - M/721 - BY SERIAL

MARCH	1950	111,000
	1951	200,000
JULY	1952	245,000
	1953	290,000
OCT.	1955	371,000
FEB.	1956	378,000
OCT.	1957	410,000

Last # Dec 1962 460.000 Rem & A

MODEL 721 - BOLT ACTION RIFLE (As Originally Introduced)

- HISTORY -

Introduced	1948
Caliber	30-06 - 270 Win. - 300 H & H Magnum (Center Fire)
Action	Bolt - Solid Frame - Box Magazine SIDE EJECTION
Barrels	Round - Double Tapered - (6) Groove Rifling Length - 24" for 30-06 and 270 Win. Length - 26" for 300 H & H Magnum
No. of Shots	5 - (4 in Magazine & 1 in Chamber) for 30-06 & 270 Win. 4 - (3 in Magazine & 1 in Chamber) for 300 H & H Magnum
Gun Length	44-1/4" - 30-06 & 270 Win. 46-1/2" - 300 H & H Magnum
Stock	Length - 30-1/2" - Drop at Heel - 2-3/8" Drop at Comb - 1-7/8". American Walnut, Checkering on Pistol Grip and Fore-end for Grades Higher than A.
Grades	A (Std.); B (Special); D (Peerless); F (Premier)
Gun Weight	7-1/4 lbs. - 30-6 & 270 Win. 8-1/2 " - 300 H & H Magnum
Sights	Front - Round Bead Mounted on Ramp Rear - U Notch with Elevation Adj.
General	Design Features - SHROUDED [redacted] Bolt Head; Solid Double Locking Lugs on Bolt; Improved Extraction Principle AND REMINGTON'S (PATENTED) RIFLING PROCESS.

SAFETY

MODEL 722 - BOLT ACTION (as originally introduced)

HIGH POWER RIFLE

Introduced	1948 in Cals. 300 Sav. & 257 Roberts 1951 in Cal. 222 Remington
	CENTER FIRE
Action	Bolt-Solid Frame-Box Magazine Side Ejection
Barrel	Round-Double Tapered-(6) Groove Rifling
	Length - 24" for Cals. 300 & 257 26" for Cal. 222
No. of Shots	5 - (4 in Magazine & 1 in Chamber) for 300 Sav. & 257 Roberts 6 - (5 in Magazine & 1 in Chamber) for 222 Remington
Gun Length	43-1/4" - 300 Sav. & 257 Roberts 45-1/4" - 222 Remington
Stock	Length - 30-1/2" - Drop at Heel 2-7/8" - Drop at Comb 1-7/8", American Walnut Checkering on Pistol Grip and Fore-end for grades higher than A
Grades	A (St'd.); B (Special); D (Peerless); F (Premier)
Gun Weight	7 lbs. - 300 Sav. & 257 Roberts 7-1/2 lbs. - 222 Remington
Sights	Front - Round Head Mounted on Ramp Rear - U Notch with Elevation Adjustment
General	Design Features - SHROUDED [redacted] Bolt Head; Solid Double Locking Lugs on Bolt; Improved Extraction Principle; and Remington's [redacted] (Patented) Rifling Process

SAFETY

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APPENDIX NO. 12 - MANUFACTURE OF BOLT AND RECEIVER OF REMINGTON MODEL 721 SPORTING RIFLES

FOREWORD: Through the kindness and courtesy of the Remington Arms Company plant at Ilion, New York, we give below an account of the extremely efficient, ingenious, and modern procedures used in the production of these parts. The authors recommend highly this particular rifle with its uniquely safe bolt; we were extremely well impressed by the general production efficiency of the plant. We point out that the descriptions below are those of the authors. The Remington company is not responsible for their shortcomings.

The basic Remington Model 721 is produced in three different models commercially. Any one of these can be purchased in premium grades so as to cost several hundred dollars; however, there are only two basic receivers and bolts. These are of the same internal and external diameter but vary in length. The longer receiver and bolt is used for the .270, the .30-06, and the .300 Holland & Holland Magnum. The Magnum is differently barreled and stocked so that there are actually two models using the longer receiver and bolt. The shorter is turned out for the Model 722 in calibers .222 Remington, .257 Remington-Roberts, and .300 Savage. The manufacturing operations on these two receivers and bolts are similar, save for the difference in length ~~of the two lengths~~ of magazine openings and the other dimensions dependent upon these. The recessed bolt face varies with cartridge head diameter; there are three different diameters, one for each model.

THE BOLT

This part is actually of three-piece construction. It consists of a bolt head, a bolt body, or sleeve, and finally the bolt handle. These are brazed ~~together~~ pinned. Many economies are made possible by this process since all three components are produced from bar stock with little waste of material and machine time. The bolt handle is actually a forging made from bar stock.

The bolt head is the most important part of this assembly from the standpoint of Firearms Identifica-

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tion. It is machined from ASME 4140 annealed bar stock or its equivalent. The operations will be listed in a somewhat condensed form below. No effort will be made to reproduce a process chart, but only to indicate along general lines the methods followed in actual production.

1 - The bar stock is turned in a turret lathe externally along three diameters and faced, counterbored, and finally undercut internally to form the relief which will eventually house the spring steel ring extractor. The front portion of the firing pin hole is drilled; the part emerges when cut off completely finished in several aspects, as shown in the accompanying illustration. ~~It is pointed out, however, that the locking lugs are solid and extend all around the bolt head.~~

2 - The bolt head is placed in a fixture and has the extra metal milled from the annular ring so that the locking lugs emerge in their final form, slightly oversize.

3 - The bolt heads are now drilled in two different fixtures. The first drilling operation puts the gas relief hole into the firing pin chamber, and the securing pin hole into the ejector chamber. The second drilling operation completes the firing pin chamber, reaming it carefully to size internally, although the front portion was finished in the initial turret lathe operation. The ejector hole also is drilled in this second drilling jig.

4 - One of the most interesting operations from an identification standpoint is the burring of the ejector hole. This requires work with hand tools, made up especially to fit into the ejector hole and extractor undercut. One tool removes the raised burr; another countersinks the edge of the ejector hole gently. It is pointed out that these are hand operations and will vary considerably from one bolt head to another.

The bolt sleeve is machined from the same stock on a semi-automatic turret lathe with a close tolerance bore at one end to receive the rear of the bolt head snugly. Certain minor cuts are made in the rear of this sleeve to receive the safety detent and the projection of the cocking piece, etc. There is, of course, the thread at the rear of the sleeve for securing the firing pin housing.

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The sleeve and bolt head are assembled under pressure and brazed in position automatically. The sleeve assembly is then turned down to slightly above finished size, locating on the end of the bolt head and the rear portion of the sleeve proper. The assembly of sleeve and bolt head is now heat treated to Rockwell 38-44, C scale, which means about 195,000 pounds per square inch, and subjected to additional operations as follows:

1 - Finish grind top and bottom of the bolt lugs concentric with the rest of the assembly. A form wheel is used on a surface grinder.

2 - Finish grind the sleeve externally on a centerless grinder up to a stop.

3 - The bolt handle is brazed to the bolt sleeve. It should be noted that these brazing operations, although carried out carefully, do not have to stand maximum stress. It's a low temperature braze so as not to disturb the heat treatment of the piece. The bolt head carries all actual load; the bolt face and lugs are in one piece.

THE RECEIVER

This is also made from annealed ASME 4140 or its equivalent; the operations in a simplified form are about as follows:

1 - In a turret lathe, the solid bar stock is drilled all the way through, counterbored, undercut, and threaded at the front end. It is also turned externally a bit oversize. The threads that will eventually receive the barrel and the shoulder that will eventually carry the locking lugs on the bolt are completely finished in this initial operation, as is the face of the receiver upon which the barrel will eventually bear.

2 - The receiver is now broached to exact diameter internally. It is then broached again to form the bolt lug splines to finished size. These operations are extremely efficient and produce cheaply completely accurate dimensions internally throughout the length of the receiver.

3 - Locating on the diameter of the receiver and on the splines, the outside of the receiver tube is turned to size and concentric with the inside.

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4 - The receivers now are subjected to plunge milling, profile milling, and broaching operations to produce the various contours, undercuts, and the like, to complete the loadings and ejection ports, the magazine well, and to receive the trigger mechanism and the like. These operations are done extremely efficiently with a minimum of trouble, and produce, where necessary, extremely close tolerances. The broaching is particularly noteworthy. Broaches are expensive; however, once made they will continue to produce thousands and thousands of parts exactly alike as to dimensions. Economies of this type largely account for the first class quality of this rifle at a comparatively moderate price.

ASSEMBLY OF RECEIVER, BOLT, AND BARREL

It will be seen from the above that final assembly of a barrel into a receiver is not controlled in any way. The barrel in a semi-finished condition is screwed in tight to the receiver, and the sighting surfaces milled on it in relation to its position in the receiver. In other words, interchangeability of barrels with receivers is not necessary and is not desirable in a commercial weapon since major repairs should be done only at the factory.

Further, when the receiver and barrel are ~~completed as~~ assembled into one integral piece, the particular bolt to be used with it is assembled in a rather novel manner. A chambering reamer operated by a rod extending down the bore adjusts the head space, if necessary, ~~in that particular~~ to this bolt. In most instances, the chamber in a barrel is slightly too short and is finished to size for that particular bolt. In this way, it is not necessary to hold the manufacturing tolerances so close as to lead to extreme cost. Each individual ~~bolt~~ rifle, however, has almost exactly minimum head space when finished in this way. When the operation is completed the serial number of the barrel-receiver combination is etched into the bolt sleeve. Therefore, these bolts are not interchangeable. This is of no importance whatever in a commercial rifle. Actually, however, the variations ~~is~~ encountered if bolts are inadvertently interchanged are never dangerous. The process greatly decreases the cost of manufacture and is one of the methods used to produce such precise work so efficiently.

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MODEL 721 DEVELOPMENT

The first successful bolt action rifle to be manufactured in the United States was the Remington-Lee. The basic design of this arm was nearly identical with present day bolt action arms. In the Lee, the bolt head was separate from the bolt body, but this bolt head had locking lugs which locked in the receiver bridge in the same manner as modern bolt rifles. Soon after the Lee rifle proved satisfactory, many modifications of this action were brought out by European countries - some of these modified Lee's were made by Remington. All bolt rifles show the influence of the Lee rifle, and some show a very marked resemblance, such as the Austrian Mannlicher, the British Lee Enfield, the Krag-Jergensen used by Denmark and later by the United States, the Belgian Mauser (1888), the French Lebel (1890), the first German Mauser (1888), the Russian Nagant, and others. Most of these modifications used a single column box much like the Lee. A few used a tubular magazine patterned after the Henry rifle, a Winchester, and the Remington-Keene, an unsuccessful bolt action which was manufactured before the Lee.

Then Paul Mauser, in 1898, developed a double column flash box magazine and further modified the Lee action for higher pressure smokeless powder cartridges. Incidentally, Paul Mauser did most of his development work here at Ilion. Following the development of the Mauser, practically all countries adopted this rifle, or modifications, for their standard military arm. The United States paid a considerable sum (after a lawsuit) for the 1903 Springfield modification.

The present commercial high-power bolt actions are also based on the Mauser. The M/720 Remington is the M/30 Remington with a few minor changes. The M/30 was brought out by Remington after the last World War to meet the demand for a high-power bolt action by the men who had been trained on the Springfield. It was merely a sporting version of the 1917 Enfield manufactured by Remington and Winchester during the last war, originally for the British as the Pattern 14 and finally as the 1917 for the United States. Many finished and partially finished parts were purchased from the Government.

Soon after the introduction of the Remington M/30, Winchester placed the competing M/54 on the market in a much wider variety of calibers. The M/54 was designed from the beginning as a sporting arm and with its selection in calibers took more than its share of the market. In 1936 Winchester revised the M/54 with a new and better trigger, a new safety (no better than the old one), a new bolt handle to allow a lower mounting of telescope sights, and a new and better stock. This rifle was the M/70. It captured a still larger share of the bolt action market.

A few years after the introduction of the M/70 Winchester, Remington introduced the M/720, a revision of the M/30, principally in looks. The M/720 continued to use the 1917 Enfield parts purchased after the last war. However, most of the parts which were near completion are used, and to produce M/720 rifles in any quantity it would be necessary to add tooling to pick up parts further back in process. High-spot tooling estimates indicate that the cost would be prohibitive.

The retail price of the basic M/720 and M/70 is now $78.45. The price in 1939 was $59.95 for the Remington and $61.25 for the Winchester. Naturally, very few of these rifles have been sold to the average hunter. The average man would be foolish to pay $60. or $80. for a piece of equipment which he would use a maximum of two weeks out of the year. Those who buy the M/720 and M/70 either have

more money than the average, or are confirmed gun bugs who prefer bolt actions for their performance. Bolt actions have in the past been chambered for higher intensity cartridges than other types. Bolt actions have, in general, been more accurate than other types, presumably due to their stronger breeching.

Within limits, and other things being equal, a lower selling price means a larger volume of sales. This is adequately illustrated in the gun business by the Remington 500 Series, a class of low-priced bolt action .22-caliber rifles, the Winchester lever action M/94, and Marlin M/36, the only two commercial low priced repeating center fire rifles adequate for deer hunting. Another low priced center fire, no longer available in quantity, is the Government Krag for the .30-40 cartridge. The .30-40 is in a power class about midway between the M/94 - .30-30 and the Springfield .30-06. The Government disposed of a number of these Krags at the nominal sum of $1.50, which explains the large volume of .30-40 cartridge sales.

Remington decided that a new center fire rifle was needed to compete in price with the Winchester M/94. Its only requisite was that it should be a right-hand operated high-power rifle, but not a lever action. Considerable time and thought was given to the different types of actions, such as the straight pull bolt, a spring returned straight pull, and conventional bolt actions. It was decided that the conventional bolt action is most readily adapted to low cost manufacture. The real reasons for the high cost of the present models is that they were not originally designed for low cost manufacture and the parts are not processed in the simplest and lowest cost manner.

In the design of the M/721, and all other guns, the questions which must be continually asked are:

1) What simple method of manufacture can be used to make the part? Can it be (a) screw machined; (b) blanked and formed; (c) simple machine cuts?

2) Is the part designed so it can be made with the fewest number of operations?

3) Can the part be made with standard tools?

4) What is the largest tolerance which can be allowed on each dimension to give satisfactory functioning, endurance, and appearance?

Considering separately each major part necessary for a bolt action rifle, what can be done to reduce the cost of manufacture through design alone?

The Stock contributes so much to the appearance and to the handling qualities and is tied down so thoroughly by convention that very little can be done by design alone to reduce the manufacturing cost. Cost reduction on the Stock must be done mainly by process changes, including new methods and new machines. Some reduction in cost can be made by making sure that the smallest number of simple cuts are used for inletting and by making sure that the new methods and new machines will work on the Stock as designed.

Barrel - The barrel is also mainly a process problem.

Receiver - By studying the high-power bolt action receiver, it was found that approximately twenty (20) machining operations would produce a receiver which would meet the requirements; the M/721 was designed accordingly. When these

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twenty operations are compared with more than 100 used on the M/720 and the Springfield, it will be seen that a major cost reduction results.

Bolt - At first glance the bolt looks like a pretty tough problem. The extractor and ejector can be changed, but the main part of the bolt must remain much the same as previous types. It is usually taken for granted that a reduction in the number of parts will reduce the cost. This is not always the case, because several simple parts may be fastened together in some manner to make a quite complicated part. This was done on the M/721 bolt. The original complicated one-piece bolt was broken up to make four comparatively simple parts - the bolt head, bolt body, bolt handle, and ball. These parts can be made with screw machines, plus a few relatively simple milling machine operations, and can be brazed or welded together by new methods to make the finished bolt. The ejector and extractor had already been simplified for use in the M/760 pump action. The ejector consists of a spring-loaded plunger, such as is used in the M/81. The extractor is essentially a snap ring which engages the notch in the cartridge rim.

Fire Control - The conventional high-power bolt action fire control usually consists of a sear and trigger and actuating springs. The sear and trigger have in the past been forged and milled to the proper shape, as were practically all small parts. The trigger release, which resulted from the design of these parts, was very poor, usually resulting in a length of pull from 1/8" to 1/4", depending on whether you asked for a single-stage or a double-stage pull. This was necessary from the safety standpoint when this type of release was used. Winchester recognized this fault and corrected it by using a blocked sear type in the M/70. In this type the trigger blocks the sear into contact with the cocking piece. When the trigger is pulled, the block is removed and the force of the main spring cams the sear away, allowing the firing pin to fall. A similar mechanism is used in the M/721.

The parts in the M/721 fire control are all blanked and formed, except pins, screws, and springs. Screw adjustments are provided which eliminate filing and fitting in assembly.

Other Parts - The remaining essential parts - the magazine, cartridge follower, trigger guard, safety, and bolt stop are blanked and formed. The cartridge feeding surfaces are formed on the magazine in place of profiling them in the receiver, as in previous bolt actions.

The relative strength of the M/721 is greater than either the M/720 or the M/70, having approximately 20 percent greater locking area than the M/720 and 40 percent greater area than the M/70.

The estimated commercial cost of the M/721 is $20.16. At 8% profit to Remington the retail price would be $40.00. The M/720 commercial cost on the same basis, but not including tool amortization, would be $67.00, resulting in a retail price of $133. to return an 8% profit to Remington.

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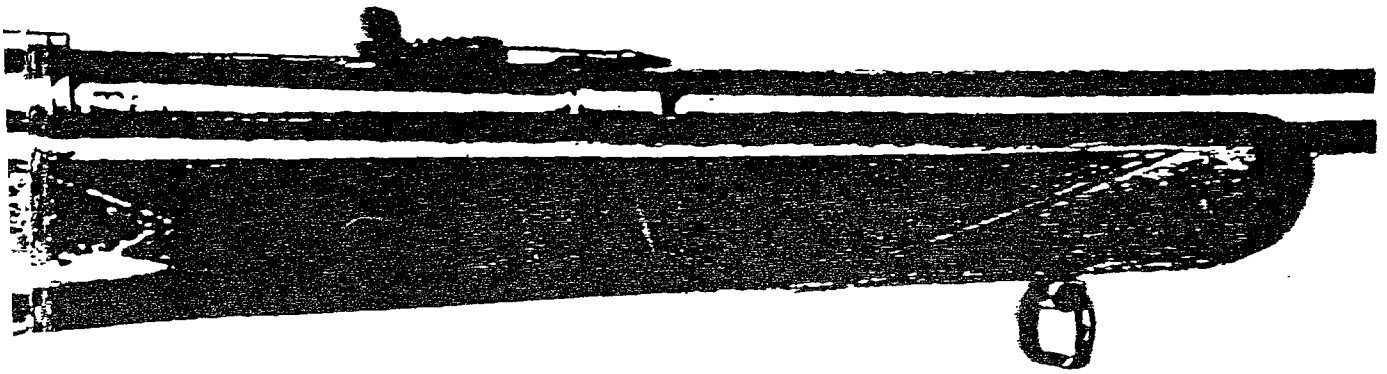
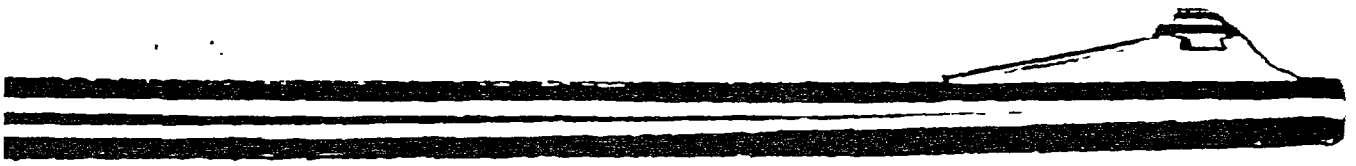
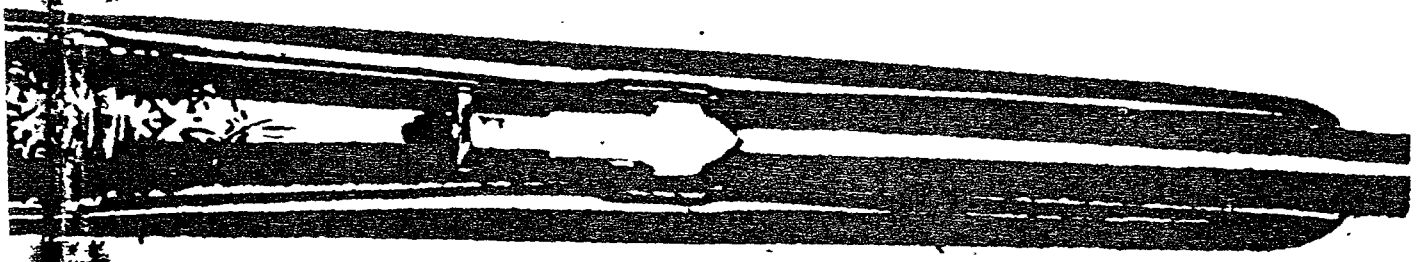


MODEL 721
GRADE "B"
SHEET NO. 10
REV. 1-25-49



MODEL 721
GRADE "B"
SHEET NO. 12
REV. 1-25-49

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



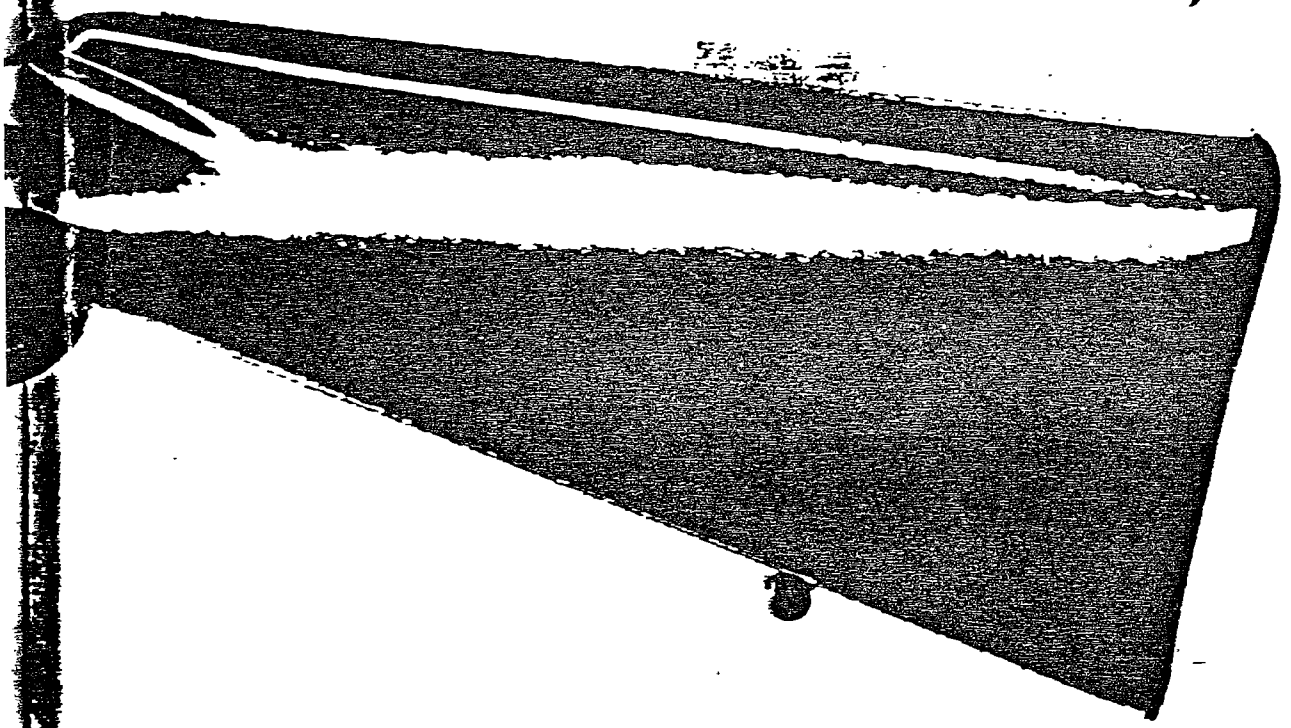
MODEL 721

GRADE "D"

SHEET NO. 15

DATE 4/21/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

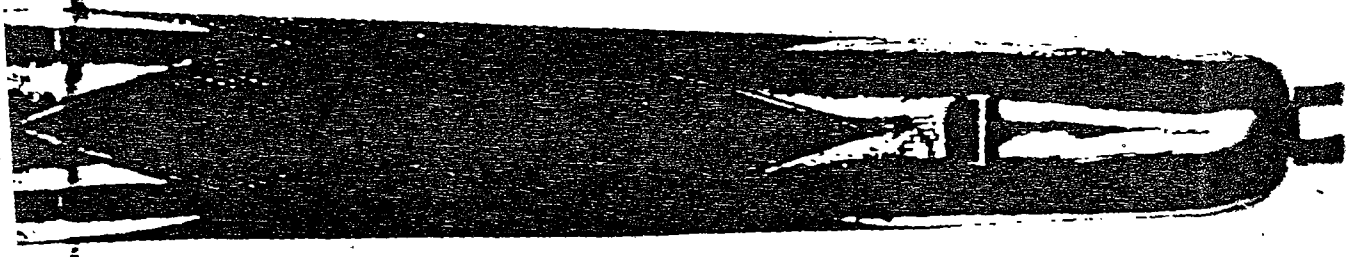


MODEL 721

GRADE "D"

SHEET NO. 16

DATE 4/21/48



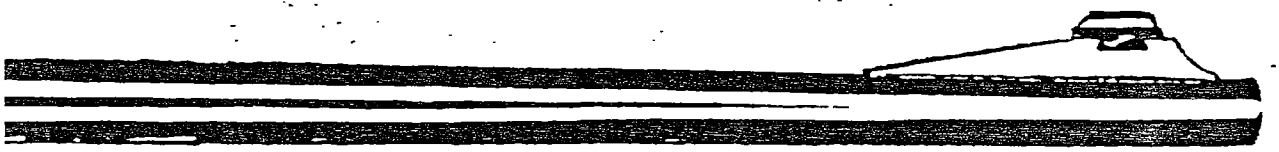
MODEL 721

GRADE "D"

SHEET NO. 17

DATE 4/21/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



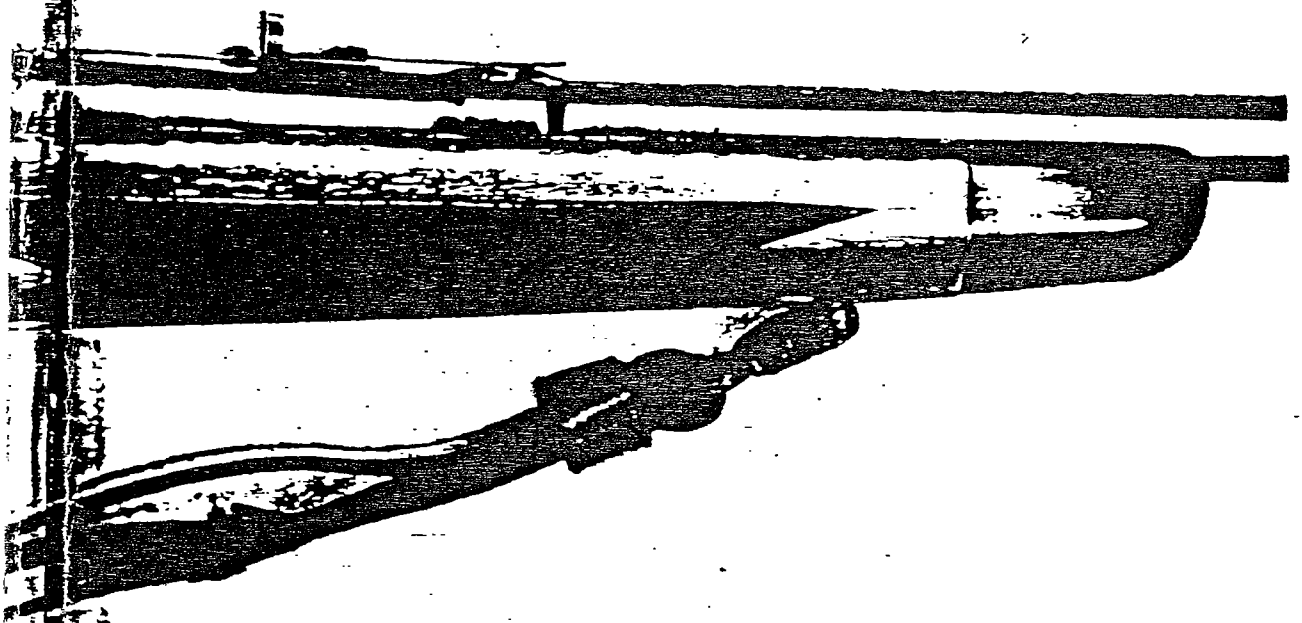
MODEL 721

GRADE "D"

SHEET NO. 18

DATE 4/21/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



MODEL 721

GRADE "F"

SHEET NO. 21

DATE 4/20/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

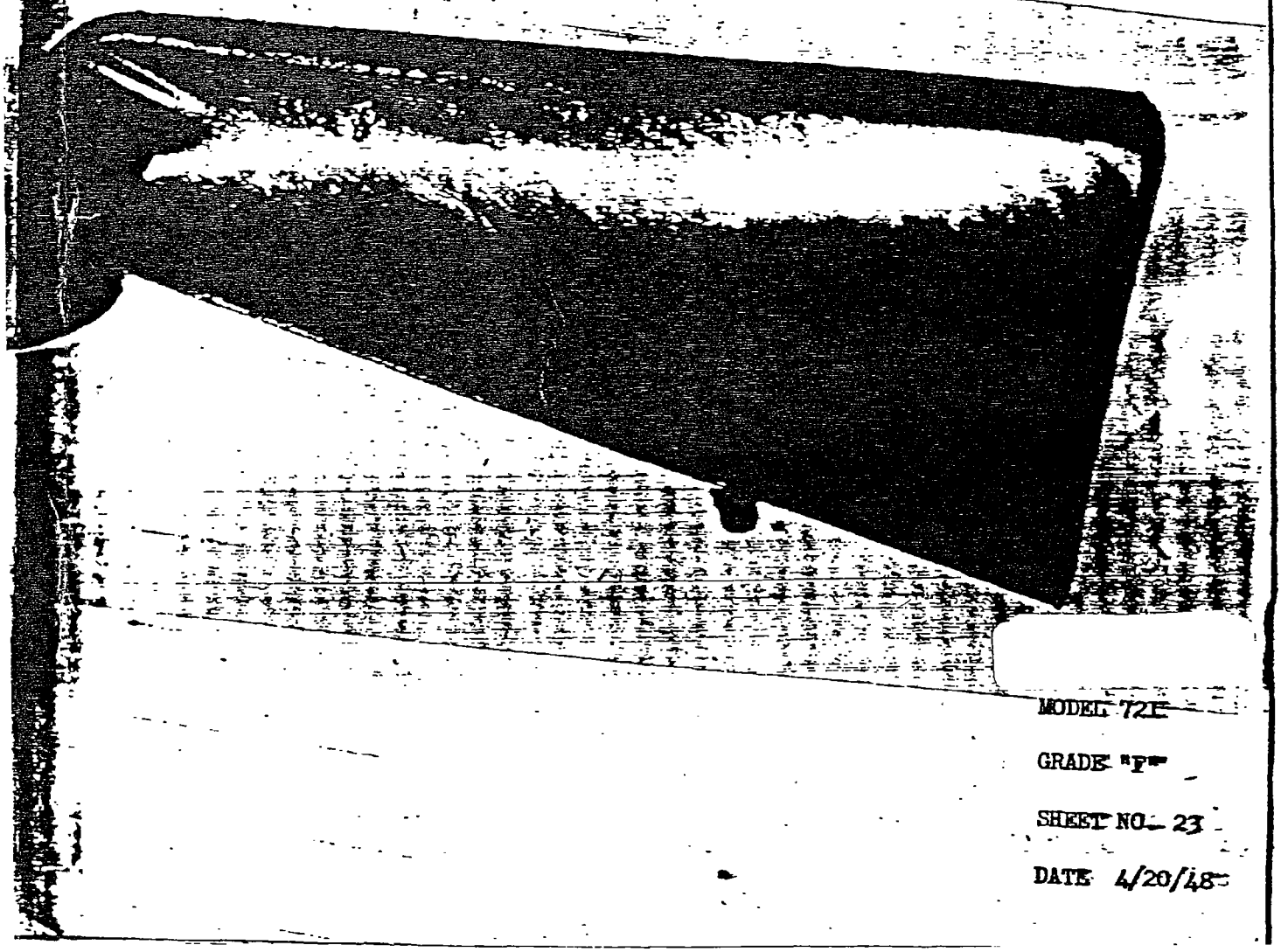
MODEL 721

GRADE "F"

SHEET NO. 22

DATE 4/20/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



MODEL 721

GRADE "F"

SHEET NO. 23

DATE 4/20/48

[redacted] M/721-722 History Dec. 23, 1948

1. Description of method used prior to Improvement

The Model 721-722 Center Fire Bolt Action Rifles were the first of the new Remington Post-War Sporting Arms and were announced on January 1, 1948. The Model 721 replaced the Model 720, which was manufactured prior to the war to compete with the Winchester Model 70, and essentially represented an improved version of the earlier Model 30 and the Remington Enfield Military Rifle. With the exception of some minor functioning difficulties, the Model 720 was considered an excellent high power bolt action rifle, however, from a manufacturing standpoint it was not economical to build and the relative high cost limited its volume. There was also a definite need for a rifle which could meet the lower priced competition of the Winchester Model 94, Marlin Model 36, and the Savage Model 40.

2. Description of the Improvement

Late in 1942 an initial design investigation was started to develop a new Remington High Power Bolt Action Rifle which could be processed by modern methods and at a cost to permit a low selling price required to achieve volume production. The present desirable features of a rifle in this class were to be retained, and if possible, further improvements were to be designed to increase consumer acceptance.

The bolt action rifle is basically one of the most simple to produce, however, conventional requirements, as well as features of the Mauser M/98 Action, have in the past influenced design to the extent that manufacturing

cost was adversely affected. For example, the Receiver and Bolt in the Model 1917 Enfield required over 250 operations in process, whereas in the Model 721 it has been possible to reduce this figure by more than 75%. Interchangeability of parts between calibers has also been achieved to a high degree. All parts in the Model 721 are interchangeable between calibers except the Barrel and Bolt Head and in a similar manner very little change is required to produce the companion Model 722 in its three smaller calibers. Not only does this reduce the investment cost in machinery and working capital, but it also contributes to lower manufacturing cost.

The new Models 721-722 have met with unusually wide acceptance and the design has been described by some writers as the first significant improvement in this type of arm since the introduction of the Mauser. In addition, the objective of low manufacturing cost has been met and opportunities for still further economies are being foreseen.

3. Estimated Savings to December 31, 1948

This information is being compiled by J. P. Bilgrem.

4. Source of Savings, etc.

This information is being compiled by J. P. Bilgrem.

5. Merits of Gun

A brochure prepared by the Sales Department entitled "What The Experts Say About the New Remington Models 721 & 722 Big Game Rifles" contains excerpts from illustrated Technical articles as published in various trade magazines and is made a part of this file.

The Extractor used in Models 721-722 is the subject of a patent application, having been developed primarily for another Remington Center Fire Rifle. It is the opinion of the Patent Attorneys that other features and

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KINZER V. REMINGTON

improvements incorporated in the design of Models 721-722 are free of any patent infringements.

6. Practice in other Instruction locations

Not applicable.

SPECIFIC INFORMATION:

1. Subject of title to be used in designation of case

Model 721-722 Bolt Action High Power Center Fire Rifle.

2. Names of Employees

Merle E. Walker
Homer W. Young

3. Position held at time of original suggestion

Merle E. Walker - Engineer-A-Mechanical Research
Homer W. Young - Engineer-A-Mechanical Research

4. Current position held

Merle E. Walker - Gun Designer
Homer W. Young - Gun Designer

5. Amount of previous awards

None

6. Recommended percentage on which award is based:

A. Originality and Ingenuity - 12-1/2%

A high degree of originality and ingenuity was demonstrated by M. E. Walker in designing "a new hunting rifle fundamentally different from any previous arm ever produced anywhere" (Quoting Col. H. P. Sheldon, Shooting Editor, OUTDOORS MAGAZINE, April 1948.) Its attractive lines, light weight, and fine trigger have resulted in an unusual customer acceptance. Also, by the proper use of

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formed metal parts, together with simplified construction of machined parts, it was possible to obtain lower product cost and at the same time a gain in additional competitive advantage by offering these rifles at a reasonable selling price.

The factor for originality and ingenuity would be evaluated as 15% in the case of H. E. Walker.

One of the principal design features of the Models 721-722 is the shrouded bolt head which provides additional support to the cartridge case, thus increases its strength considerably beyond that possible with the conventional hook type Extractor. Comparative tests indicate the Models 721-722 as being the strongest action ever built in the range of cartridges handled. The enclosed bolt head is made possible by using a new and novel ring type of Extractor which was designed originally for another Remington experimental rifle, Model 760. A principal contributor to the design of the Extractor was Homer W. Young who displayed unusual ingenuity in conceiving a means of coining the lips on the Extractor Ring at a time when it appeared that this design would have to be abandoned and a conventional extraction system used. A factor of 10% has been assigned to H. W. Young for originality and ingenuity in his contribution to the Models 721-722. The overall factor of 10-1/2% is the average for the two individuals.

B. How Much of the Problem was a part of the employee's work - 50%

A factor of 50% applies to each of the employees in connection with this development because of specific assignments.

C. Length of time during which savings will continue - 125%

Calculations for projects covering developments of New Arms

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KINZER V. REMINGTON

are based on an expected life of ten (10) years. Therefore, a use factor of 125% would apply.

B. Summary of Percentage Factors

Factor (A) x Factor (B) x Factor (C) = Overall Factor

12-1/2% x 50% x 125% = 7.8%

7. Award is to be divided between two (2) employees

Since the novel Extractor makes possible the Shrouded Bolt Head and represents one of the most noteworthy features in the Model 721-722 Rifles, it is the opinion of Supervision that H. W. Young should share 40% of the award justified for the development of these two new Rifles. The remaining features and improvements have resulted from the efforts of the principal designer, H. H. Walker, who therefore should be the recipient of the remaining 60% of the award.

Attachments:

Brochure "What the Experts Say About the New Remington Models 721 & 722 Big Game Rifles"

Letter: B. B. Foote to S. M. Alvis - 11/11/48.

SMA:LJ

SM Alvis

cc: R.A. Williamson
H.J. Blackman

Ilion, New York
June 28, 1960

D. E. MILLER

MODELS 721-722 SPORTER STOCK

In talking with Merle Walker there seems to be some question in our minds that the proposed new sporter stock will not pose a problem for you. We feel certain that if it is tooled up in such a way as to come off the machining operations with the indicated dimensions, it is possible to accomplish the sanding within the proposed Methods & Standards recommended time.

We would be glad to assist in completion of development for this job and demonstrating the technique; otherwise we feel prone to suggest that it not be attempted.

S. M. Alvis
Ilion Research Division

SMA:T

MODELS 721 - 722 CENTER FIRE RIFLES

Introduced 1948

Discontinued 1962

Summary of Calibers and Barrels

	Caliber	Barrel Length
Model 721	30-06	24" & 22"
	300 Magnum	26" & 24"
	270 Win.	24" & 22"
	280 Rem.	22"
	264 Win. Mag.	22"
Model 722	308	24" & 22"
	300 Sav.	24" & 22"
	257	24" & 22"
	244	24" & 22"
	222	26" & 24"
	222 Mag.	24"
	243	22"

SMAlvis:T
July 1970

JAC WELLER
Post Office Box 149
PRINCETON, NEW JERSEY 08540

30 November 1972

Dear Wayne,

In cleaning out an old filing cabinet I came across an Appendix to my Firearms Book written in 1953. This refers to the manufacture of the old Model 721 and 722 Remington Bold Action Rifle. I sent it along to you fellows then but your Chief of Research * asked me not to include it; it wasn't included. As I recall, the excuse was that your competitors would know more of your process engineering than you wanted them to know. The Remington individuals involved at the time were surprised that I was able to put together something of this sort in a relatively short time at Ilion.

I don't need this paper back. After you have chuckled over the mistakes that it probably contains, toss it in the waste basket.

Best regardd.

Sincerely,

JAC WELLER

JacW/mb

Enc. - Appendix

*Probably "vetoed" by Doc - Smm

Wayne E. Leek, Esq.
Manager,
Firearms Research & Design
Remington Arms Company
Ilion, New York

REMINGTON ARMS CO.
RECEIVED
DEC 4 1972
FIREARMS DESIGN

Alion —

(16)

RECEIVED
JAN 09 1976
CONSUMER SERVICE

January 7, 1976
R#1 County Line Rd.
Crystal Mich, 48818

RECEIVED
JAN 13 1976
ARMS SERVICE

Dear Sirs,
Recently I aquired a Remington model 720 in ~~.264 magnum cal.~~ Could you please tell me something about this rifle, such as when made, how many SO on and so forth.
Ser No is 448119, could you also tell me, is this gun a collector item, and if so about what is it's value?

Thank You
Kenneth A Roberts

Model 721
264 WIN. MAG. cartridge

January 19, 1976

Mr. Kenneth T. Roberts
R. #1 County Line Rd.
Crystal, Michigan 48818

Dear Mr. Roberts:

You have one of the last Remington Model 721 rifles manufactured in late 1961, and one of the first Remington rifles chambered for the .264 Win. Mag.

Our records do not reveal exactly how many of the 721 rifles were chambered for the .264 cartridge; however, this model was discontinued during 1962 and the New Model (Remington Model 700) was offered in the .264 Win. Mag. cartridge.

We are not able to assess the value of your rifle.

Sincerely,

L.K. Goodstal
Curator-Remington Museum

LKG:tpp

STUART OTTESON
6724 CANEEL COURT
SPRINGFIELD, VA. 22152

m/721

January 30, 1979

Mr. Sam Alvis
46 Armory Street
Ilion, New York 13357

Dear Sam:

I had been waiting to write until I got a chance to get up to Bridgeport and try to search out some more photographs, possibly something in Remington's patent files. But things seemed to keep slipping, and I must apologize for not replying to your letter sooner.

Unfortunately, so far we haven't really been able to find the kind of pictures I was hoping for -- something lending an air of "authenticity" to the story. Those "testing" pictures of the 721 would have been absolutely perfect, except we would have to find actual photographs. The brochure pictures, besides being small, are half-tones (screened) and so ending up with a legible reproduction in print from them would be virtually impossible.

The pictures of Mike Walker and Homer Young are good quality, but I'm afraid too far removed from the days of the 721/722 project to be used. Your incentive-bonus write-up for them had some excellent information in it, and it will be very helpful. I guess the frustrating thing is that I've been fortunate in getting some great information from you and Mike, but as far as photographs go, you would think the 721 was developed before the time of Mathew Brady.

I'm reluctant to ask you to look for any more photos, because you've already done more than I have any right to expect. But if you could find even some "mug" shots from the 1940's of Walker, Howell, Young, and Leek, this might be the best way available to show what these key individuals in the project looked like. Of course if you should ever run across photos of those 721 tests, I could always use them, because I believe they would have significant and permanent value. It makes me shudder to think that someone probably threw them in a trash can.

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KINZER V. REMINGTON

January 30, 1979

Sam, I owe you a lot more postage than for just that recent package. I'm not sure what it adds up to, but since you may hopefully be sending more material some time, I'm enclosing a check for a hundred stamps (at least before they go up in price again).

Best regards,

Stuart

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To:
Dick Dietz – This is Company proprietary info.

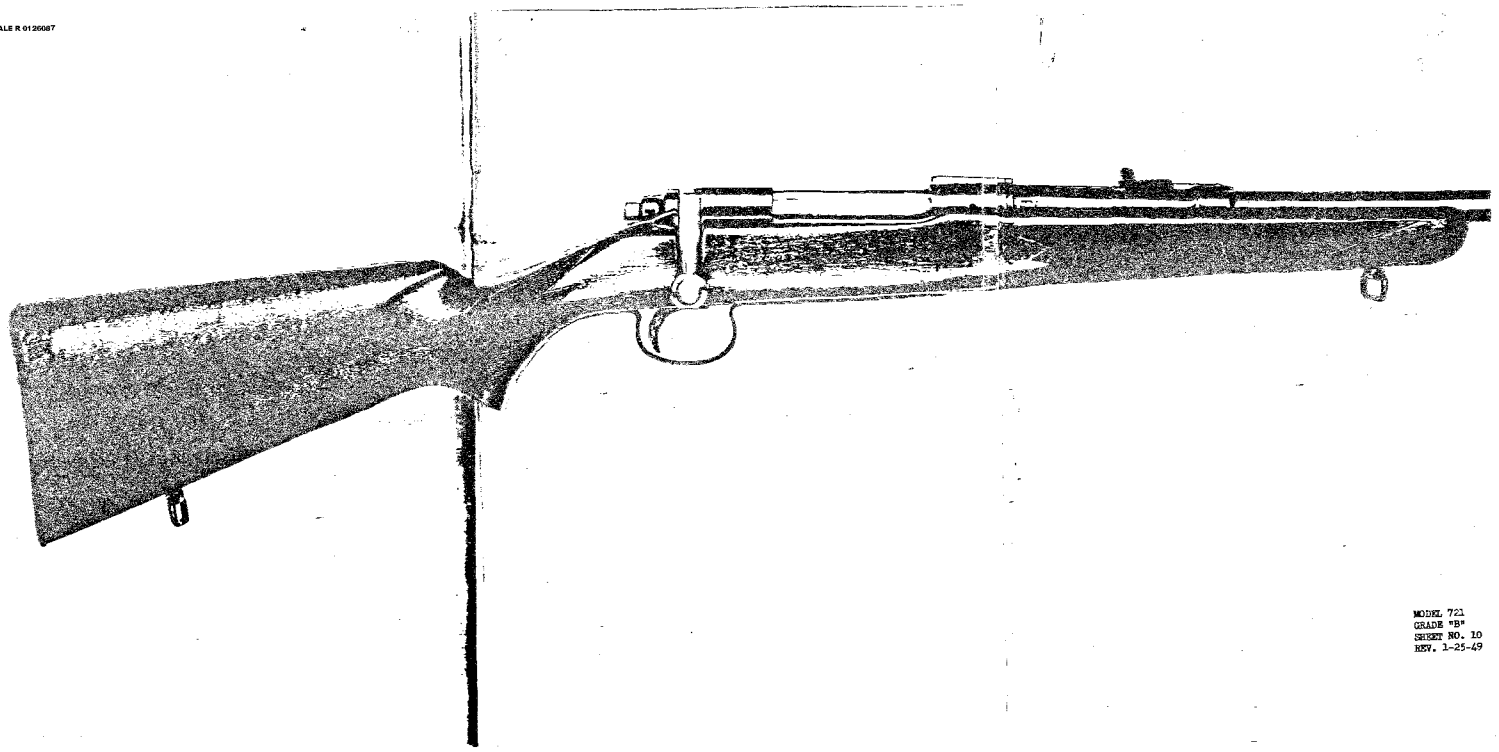
Total gun quantities:

M/720 - - - 2,427
M/721 - - - - 270,989
M/722 - - - - 150,936
M/725 - - - - 16,629
M/600 - - - - 94,028
M/660 - - - - 50,536

Serial number blocks:

M/720 - - - - 40,000 to 42,427
M/721 } together at 1,100 to 423,014
M/722 }
M/725 - - - - 700,000 to 716,700
M/600 - - - 1,000 to 131,552 from 1963 to 1968. During November 1968 the number system was changed and started with the M/660 block at 6,200,000. The M/660 and M/600 were numbered in this same block, up to 6,222,957.

L. Goodstat 9/15/82



MODEL 721
GRADE "B"
SHEET NO. 10
REV. 1-25-49

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NOTE

1. The microscopic process records in this folder are filed in order of operation numbers. Each operation is identified with a color-coded sheet.

2. Each operation may have several documents. Where this is true they have been put in order according to the date that they were produced, the latest being on top.

3. All sheets processed their operation sheets and are separated from them by colored tissues.

M/721-722

Final Assembly

TPR-1

PROCESS RECORD

ISSUED BY:

TECHNICAL DEPARTMENT

ARMS DIVISION

REMINGTON ARMS COMPANY

ILION, NEW YORK

ISSUED TO: _____

DEPARTMENT

TPR-2 REV

OBSOLETE APR 22 1947 Rev. 1

PART: Final Assembly	PART No.

SEQUENCE OF OPERATIONS

OPER. NO.	OPERATION	DEPT.
2	Assemble Follower Group	
4	assemble Firing Pin Group	
6	assemble Trigger Group	
8	Engrave Serial Number on Receiver	
10	Fit and Head Bolt assembly to Barrel assembly	
12	Engrave Serial Number on Bolt	
14	Ream Gear Hub, assemble Extractor, Ejector Spring and Ejector Pin	
16	assemble Sights and Receiver Plug Screws	
18	assemble Firing Pin assembly into Bolt, Trigger assembly, Bolt Stop, and Receiver.	
20	Assemble Stock to Action etc.	
22	Install Follower and check function	
24	Final Inspection	
26, 28, 30	Target and Test	
32	Check for Low Ammunition	
34	Final Inspection.	

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-2 REV

changed Reapproved 4-11-47

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY

SEQUENCE OF OPERATIONS

OPER. NO.	OPERATION	DEPT.
	Final Chamber Reaming	
	Engrave Serial Number on Receiver	
	Engrave ~~Mark~~ Serial Number on Bolt	
	Assembly of Bolt	
	Assemble Trigger Assembly, Bolt Stop & Receiver	
	Assemble Sights	
	Final Assembly	
	First Inspection	
	Target and Test	
	Check for Live Ammunition	
	Final Inspection	

COMPILED BY:	APPROVAL & DATE:
MHL 4-10	MHL 4-10-47 JM 4/10

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

M. H. SULLIVAN, INC.

R-2

PART: FINAL ASSEMBLY

PART No. FINAL ASSEMBLY

DATE MAR 18 1947

SEQUENCE OF OPERATIONS

SEQ. NO.	OPER. NO.	OPERATION	DEPT
2	1	Engrave Serial Number on Receiver	
4	2	Assemble Trigger Assembly, Bolt Stop & Receiver.	
10	3	Final Chamber Reaming	
5	4	Assemble Sights.	
6	5	Final Assembly.	
3	6	Mark Serial Number on Bolt.	
7	10	First Inspection.	
8	11	Target and Test.	
9	12	Check for Live Ammunition.	
10	13	Final Inspection	

COMPILED BY | APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N.Y.

REVISED AUG 26 1946

PART: FINAL ASSEMBLY

PART No. FINAL ASSEMBLY

Received MAR 18 1943

SEQUENCE OF OPERATIONS

SEQ. NO.	OPER. NO.	OPERATION	DEPT.
1	1	Engrave Serial Number	
2	2	Assemble Trigger Assembly, Bolt Stop & Receiver.	
3	3	Final Chamber Reaming	
5	4	Assemble Sights.	
6	5	Final Assembly.	
4	6	Mark Serial Number on Bolt.	
7	10	First Inspection.	
8	11	Target and Test.	
9	12	Check for Live Ammunition.	
10	13	Final Inspection	

COMPILED BY:

APPROVAL & DATE: 3/30/43

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART FINAL ASSEMBLY

SEQUENCE OF OPERATIONS

OPER. NO.	OPERATION	DEPT.
	Chamber Reaming	
	Engrave Serial Number on Receiver	
	Engrave Serial Number on Bolt	
	Proof Test Number on Bolt	
	Assembly of Bolt	
	Assemble Trigger Assembly, Bolt Stop & Fasteners	
	Assemble Stocks	
	Final Assembly	
	Final Inspection	
	Shoot and Test	
	Check for Head Space Gage	
	Final Inspection	

COMPILED BY: [redacted] APPROVAL & DATE: [redacted]

REMINGTON ARMS COMPANY, INC. ILION, N.Y.

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KINZER V. REMINGTON

TPR 2 REV

PART: FINAL ASSEMBLY	PART No FINAL ASSEMBLY

SEQUENCE OF OPERATIONS

OPER. NO.	OPERATION	DEPT
4	ASSEM. FIRING PIN ASSEMBLY Final Chamber Reaming	4
	Engrave Serial Number on Receiver	
	[illegible] Serial Number [illegible]	
	Assembly of Bolt	
	Assemble Trigger Assembly, Bolt Stop & Receiver	
	Assemble Sights	
	Final Assembly	
	First Inspection	
	Target and Test	
	Check for Live Ammunition	
	Final Inspection	

COMPILED BY

APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-2

PART: 721-722 Final Assembly	PART No. Final Assembly

DELETE

SEQUENCE OF OPERATIONS

SEQ. NO.	OPER. NO.	OPERATION	DEPT.
	1	Engrave Serial Number	
	2.	Assemble Trigger Seat Assembly, Bolt Stop, Spring, & Receiver	
	3.	Machine Chamber	
	4.	Assemble Sights	
	5.	Final Assembly	

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

Finish assembly

Register sheet obsoleted 1-27-47

M H Smith

Sin Barrel Assembly 170.00 for regrind sheet

TPR-17

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY

REGISTER OF ALL PROCESS RECORD REVISIONS

DATE	DESCRIPTION OF CHANGE
4/4/46	OBSOLETE Operation Number 1 - Added operation and fixture to be designed. Operation Number 2 - Added special machine and tooling to be designed.
7/25/46	Added Colmonoy Application for Reamers B-51592 to Operation Number 3.
7/25/46	Added Reamer Tubes B-90098W, B-90098U, B-90098V to Operation Number 3.
7/25/46	Added following gages to Operation Number 3: B-52086W,V C-52093 C-52095W B-51994W,V C-52094 C-52093W B-51995W,V C-52095 C-52094W B-52084W,V C-52096 C-50297W B-52085W,V C-52097
7/25/46	Added Forming Guide A-52347 to Operation Number 1.
7/25/46	Changed Sequence of Operations from 1, 2, 3, 4, 5, 6, to 1, 2, 3, 5, 6, 4.
7/25/46	Changed name of Operation Number 3 from Machine Chamber to Final Chamber Reaming.
7/25/46	Changed Step Gage to Flush Pin Gage B-52089 on Operation Number 10.
7/29/46	Assigned Operation Number 10 to First Inspection. Assigned Operation Number 11 to Target & Test. Assigned Operation Number 12 to Check for Live Ammunition. Assigned Operation Number 13 to Final Inspection.

COMPILED BY:	APPROVAL & DATE: MWR 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

Rifle
Fitch
8/20/46

PART: Final Assembly	PART No. Final Assembly

REGISTER OF ALL PROCESS RECORD REVISIONS

DATE	DESCRIPTION OF CHANGE
OBSOLETE	Op #1 - Added operation and fixture to be designed. Op #2 - Added special machine and fixture to be designed.
7-23-46	Added 705, To Oper. #3. C-51591 C-51886 C-51887 C-51888 C-51889 B-90098-W B-90098-V B-90098-U B-51995-W B-51995-V B-52086-W B-52086-V B-51994-W B-51994-V B-52084-W B-52084-V B-52085-W B-52085-V C-52093 C-52094 C-52095 B-52096 C-52097 C-52093-W C-52094-W C-52095-W C-52097-W D-51580 C-52431

COMPILED BY:	APPROVAL & DATE.

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-17

PART: Final Assembly	PART No. Final Assembly

REGISTER OF ALL PROCESS RECORD REVISIONS

DATE	DESCRIPTION OF CHANGE
4/4/46	Op. #1 - Added operation and fixture to be designed. Op. #3 - Added Special Inspector and Tooling to be designed.

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

OBSOLETE MAR 18 1947

FINAL ASSEMBLY | PART No. 4/&21 & 722 FINAL ASSEMBLY

OPERATION: ENGRAVE SERIAL NUMBER ON BARREL | OPER. No.: 1

PROCESS RECORD

EQUIPMENT: Gorton 3 U Engraver

SPEED.

FEED: HAND

MAX. PROD. PER HOUR:

COOLANT: None

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No
1 Engraving Cutter	A 52926	1 Fixture	D 52915
1 Collet Bushing (Dwg. # B 50109W)	Gorton #9619 D	1 Forming Guide	A 52947

FINAL TECHNICAL PROCESS RECORD DATE .....

1947

SKETCH

EQUALIZER

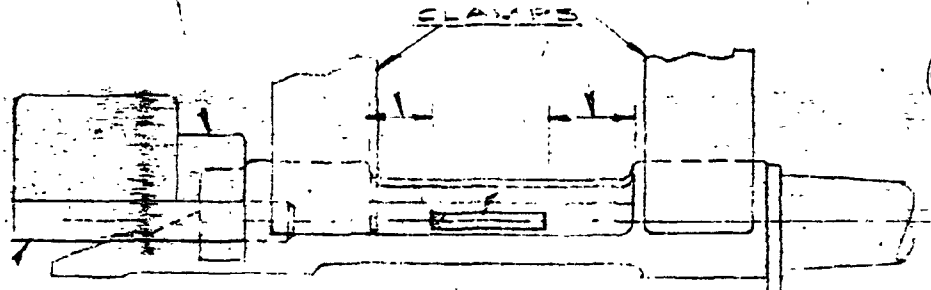
STOP

SERIAL NO.

No. WHEEL ON MACHINE

CLAMPS

OPERATOR



PLAN VIEW

COMPILED BY.

APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

REVISED 2-7-1946

TPR-9

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: ENGRAVE SERIAL NUMBER	OPER. No.: 1

OBSOLETE DEC 27 19[illegible]

PROCESS RECORD

EQUIPMENT: Gorton 3U Engraver

SPEED:

FEED: Hand

MAX. PROD. PER HOUR: 50

COOLANT: None

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No	TYPE	No
1-Engraving Cutter	Purchase	1-Fixture to locate on O.D. and barrel bracket	[redacted]
		1-Forming Guide	A-52347

SKETCH

New Sheet for 12/70

12345

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC. REVISED AUG 26 1965

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: ENGRAVE SERIAL NUMBER	OPER. No.: 1

OBSOLETE

PROCESS RECORD

EQUIPMENT: Gorton 3U Engraver

SPEED: FEED: Hand

MAX. PROD. PER HOUR: 50 COOLANT: None

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No.
1. Engraving Cutter	Purchase	1.- Fixture to locate on O.D. and barrel bracket	D-52332
		Forming Guide	A-52347

SKETCH

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-8

PART: 721-722 Final Assembly	PART No. Final Assembly
OPERATION: Engrave Serial Number	OPER. No.: 1

PROCESS RECORD

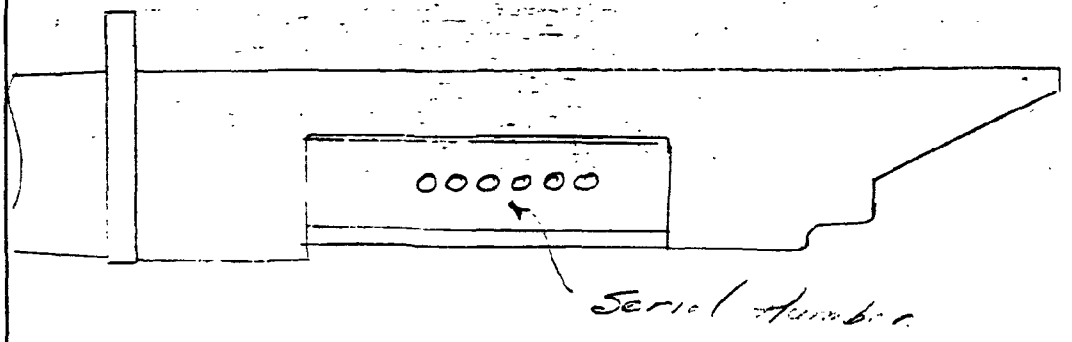
EQUIPMENT: Gorton Engraver

SPEED: FEED:

MAX. PROD. PER HOUR: COOLANT:

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No
Engraving Cutter	Purchased	Fixture Locates on O.D. of barrel	Design
		Bracket	
		FORMING & GUIDE	Purchased
		Numbering Heads	Purchased

SKETCH



COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-20

PART: Final Assembly	PART No.
OPERATION: Assemble Follower Group 17115Y-721 17116Y-722	OPER. No.: 2.

1. Assemble Magazine Spring (17028-721) - (17891-722) and Follower (17027-721) - (17056-722).

OBSOLETE APR 22 1947

COMPILED BY: MKS.	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPH-20

PART: FINAL ASSEMBLY | PART NO. FINAL ASSEMBLY

OPERATION: ASSEMBLE TRIGGER ASSEMBLY, BOLT STOP & RECEIVER | OPER. No.: 2

Removed OBSOLETE MAR 10 1947

PROCESS RECORD - ASSEMBLY

STEP	TOOLS*	REMARKS
1. Insert Trigger Assembly, 17036-Y.		
2. Start Bolt Stop Pin, 17037-W, and Sear Pin, 17037-V, from Right Side.		
3. Insert Bolt Stop Spring, 17014, and Bolt Stop, 17018.		
4. Drive out Dummy Pins with Bolt Stop Pin and Sear Pin.		
5. Insert Bolt and push safety on.		There must be clearance between Sear and Trigger.

* Use normal complement of Hand Tools to Assemble as Required.

FINAL TECHNICAL PROCESS RECORD DATE .....

MWP

COMPILED BY. | APPROVAL & DATE.

REMINGTON ARMS COMPANY, INC. ILION, N. Y.

REVISED AUG 26 1946

TPR-10

PART: 721-722 Final Assembly	PART No. Final Assembly
OPERATION: Assemble Trigger Assembly, Bolt Stop & Retainer	OPER. No.: 2

PROCESS RECORD

EQUIPMENT:

MAX. PROD. PER HOUR: COOLANT:

STATION			TOOLS & GAUGES		TOOL HOLDERS & FIXTURES	
STEPS	SPEED	FEED	TYPE	No.	TYPE	No.
1. Insert Trigger Assembly						
2) Start fire Control Hole From right Side.			Hammer			
3. Insert bolt Stop Spring & bolt stop						
4. Drive out Primary Pins with fire Control Hole Pins.			Hammer + Drift Punch			
5. Insert bolt [illegible]						

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

See A 1

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FINAL CHAMBER REAMING	OPER. No.: 3

PROCESS RECORD

EQUIPMENT: Special Chambering Machine

SPEED: FEED: Hand

MAX. PROD. PER HOUR: COOLANT:

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No.
.257 Robts.	C-52094		
.300 Sav.	C-52095		
Chamber Heading Dummy Master for Cdg. Rim C'bore .300 H & H Mag.	B-52096		
Chamber Heading Dummy Master for Shoulder .300 H & H Mag.	C-52097		
Taper Test Plug for Master .30-06 Added use			
.270 Win.	C-52093W		
.257 Robts.	C-52094W		
.300 Sav.	C-52095W		
.300 H & H Mag. for Ctg. Rim Counterbore Shoulder	C-52097W		

COMPILED BY: APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC. REVISED OCT 18 1946;

ITPR-6

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FINAL CHAMBER REAMING	OPER. No.: 3

Checked & Revised by ... 4-9-47

PROCESS RECORD

EQUIPMENT: Special Chambering Machine

SPEED: FEED: Hand

MAX. PROD. PER HOUR: COOLANT:

TOOLS & GAUGES		TOOL HOLDERS. JIGS & FIXTURES	
TYPE	No.	TYPE	No.
Reamer:	B53297	Reamer Tube:	
.30-06	~~C-51591~~	.30-06, .300 H & H Mag., .300 Sav.	B-90098W
.257 Robts.	~~C-51886~~		
.270 Win.	~~C-51887~~	.270 Win	N-90098V
.300 H & H Mag.	~~C-51888~~	.257 Robts.	B-90098U
.300 Sav.	~~C-51889~~		
		Fixture	B-51580
Hand Reamer Assembly			
.300 H & H Mag. Ctge. Rim Counterbore,	C-52431		
Heading Dummy			
.30-06 & Added Use			
.270 Win.			
Go	B-51995W		
No Go	B-51995V		
.257 Robts.			
Go	B-52086W		
No Go	B-52086V		
.300 Sav.			
Go	B-51994W		
No Go	B-51994V		
.300 H & H Mag. Ctge. Rim Counterbore			
Go	B-52084W		
No Go	B-52084V		
.300 H & H Mag. Shoulder			
Go	B-52085W		
.300 H & H Mag. No Go	B-52085V		
Chamber Heading Dummy Master			
.30-06 & Added Use			
.270 Win.	C-52093		

COMPILED BY:	APPROVAL & DATE: 7-11-47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

Sheet 3

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FINAL CHAMBER REAMING	OPER. No.: 3

PROCESS RECORD

EQUIPMENT: Special Chambering Machine

SPEED: FEED: Hand

MAX. PROD. PER HOUR: COOLANT:

3/31/47 (EH)

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	NO.	TYPE	No.
Reamer:		Reamer Tube:	
.30-06	C-51591	.30-06, .300 H & H Mag., .300 Sav.	B-90098W
.257 Robts.	C-51886		
.270 Win.	C-51887	.270 Win	N-90098W
.300 H & H Mag.	C-51888	.257 Robts.	B-90098U
.300 Sav.	C-51889		
		Fixture	B-51580
Hand Reamer Assembly		T95 8/29/46	
.300 H & H Mag. Ctge. Rim Counterbore	C-52431		
Heading Dummy			
.30-06 & Added Use			
.270 Win.			
Go	B-51995W	C-52031	
No Go	B-51995V		
.257 Robts.			
Go	B-52086W		
No Go	B-52086V		
.300 Sav.			
Go	B-51994W		
No Go	B-51994V		
.300 H & H Mag. Ctge. Rim Counterbore			
Go	B-52084W		
No Go	B-52084V		
.300 H & H Mag. Shoulder			
Go	B-52085W		
.300 H & H Mag. No Go	B-52085V		
Chamber Heading Dummy Master			
.30-06 & Added Use			
.270 Win.	C-52093		

COMPILED BY:	APPROVAL & DATE:

REVISED Oct 18 1946

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR→

PART: 721-722 Final Assembly	PART No. Final Assy
OPERATION: Machine Chamber	OPER. No.: 3

PROCESS RECORD

EQUIPMENT: Special Machine (Design)

SPEED: FEED:

MAX. PROD. PER HOUR: COOLANT:

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No
1 Special Reamer for following calibers 300 Sav. 257 Roberts 270 Win. 300 Mag. 30-06	Design	1- Fixture 1- Set Mat & Min. Heating Plugs for same Calibers	Design Available

SKETCH

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-10

PART: Final Assembly | PART No. —

OPERATION: Assemble Firing Pin Group 17223YW-721 17223YV-722 | OPER. No.: 4

PROCESS RECORD

EQUIPMENT: Delta Drill Press #17-510 with Turret Head

MAX. PROD. PER HOUR: | COOLANT:

STATION			TOOLS & GAUGES		TOOL HOLDERS & FIXTURES	
STEPS	SPEED	FEED	TYPE	No.	TYPE	No.
1. Assemble Firing Pin (17021W-721) (17021V-722) Main Spring (17029W-721) (17029V-722) Bolt Plug (17012) and Firing Pin Head (17023)						
2. Compress in fixture					Fixture	DS-2025
3. Drill and Ream Firing Pin Cross Pin Hole	3000	Hand	#43 (.089) Drill (B-90054M)	Std	Fixture #32 Jacobs Chuck (B-90055V)	DS-2025 Std
			.0934 Reamer (B-90079T)	Std RS4		
4. Insert Firing Pin Cross Pin (17022)						
5. Insert U clamp			U clamp	BS-2037		
6. Remove from fixture						

COMPILED BY: MKJ | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

OBSOLETE APR 22 1941

TPR-20

PART: FINAL ASSEMBLY | PART No. FINAL ASSEMBLY

OPERATION: ASSEMBLE SIGHTS | OPER. No.: 4

OBSOLETE MAR 18 1947

PROCESS RECORD - ASSEMBLY

STEP	TOOLS *	REMARKS
1. Insert Front Sight, 17026, ~~flush with~~ center on Ramp		Must be tight in Dovetail
2. Insert Rear Open Sight Assembly, 17030-Y, and Open Sight Step, 17033-W		Must be tight in Dovetail

* Use normal complement of Hand tools to Assemble as required.

FINAL TECHNICAL PROCESS RECORD DATE ....

COMPILED BY: | APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

REVISED AUG 26 1948

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: ASSEMBLE SIGHTS	OPER. No. 4

PROCESS RECORD - ASSEMBLY

STEP	TOOLS *	REMARKS
1. Insert Front Sight, 17026, [illegible] Ramp	Vise Jaws C-53325	Must be tight in Dovetail
2. Insert Rear Open Sight Assembly, 17030-Y, and Open Sight Step, 17033-W	Vise Jaws C-53325 4/18/47	Must be tight in Dovetail

* Use normal complement of Hand tools to Assemble as required.

FINAL TECHNICAL PROCESS RECORD DATE MAR 18 1947

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

REVISED MAR 18 1947

TPR-10

PART [redacted] Hand Assembly

PART No [redacted]

OPERATION ASSEMBLE

OPER No 2 4

PROCESS RECORD

EQUIPMENT Delta Single Spindle Drill Pre #17-21C Plus Turret Head

MAX PROD PER HOUR

COOLANT Soluble Oil

STATION			TOOLS & GAUGES		TOOL HOLDERS & FIXTURES	
STEPS	SPEED	FEED	TYPE	No	TYPE	No
1-Assemble Firing Pin 17021-W,V Main Spring 17029-W,V Bolt Plug-17012						
~~2-Compress Main Spring 17029-W,V and Bolt Plug-17012~~					1-Fixture	D52025
3-Insert Firing Pin Head-17023					1-Fixture	D52025
[illegible]			"U" Clamp	B52037		
4-Drill and Ream Firing Pin Hole through Firing Pin Head	3000	Hand	#43 H.S.S. Drill 0.0934 Reamer	B90054H B90079T	1-Fixture 1-#32 Jacobs Chuck	D-52025 B90085V
5-Insert Firing Pin Cross Pin 17022					1-Fixture	D-52025
6 Remove from fixture						

AUTHORIZED
TEMPORARY
APR 10 19[illegible]

COMPILED BY

APPROVAL & DATE mH 5/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TYPE-10

PART: 721-722 Final Assembly SAMPLE

PART No. Final Assembly

OPERATION: Assemble Sights

OPER. No.: 4

PROCESS RECORD

EQUIPMENT:

MAX. PROD. PER HOUR:

COOLANT:

STATION			TOOLS & GAUGES		TOOL HOLDERS & FIXTURES	
STEPS	SPEED	FEED	TYPE	No	TYPE	No
1) Insert front sight flush with ramp.			Fiber Hammer			
2) Insert Rear open sight and open sight Step			Fiber Hammer			

COMPILED BY:

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-20

PART: FINAL ASSEMBLY | PART No. FINAL ASSEMBLY

OPERATION: FINAL ASSEMBLY | OPER. No.: 5

Revised OBSOLETE MAR 18 1947

PROCESS RECORD - ASSEMBLY

STEP	TOOLS *	REMARKS
1. Check and set Trigger Pull at 4 to 6 lbs.		
2. Position Stock 17035-W - Bottomed		Check that barrel bracket lug contacts back of recoil shoulder in stock
3. Insert Magazine and Follower Assembly, 17115.		
4. Insert Trigger Guard, 17054-W and Trigger Guide Plate, 17055.		
5. Insert Front Guard Screw, 17025-W and Rear Guard Screw, 17025-V. Gun guard screw 17580		
6. Insert Receiver Plug Screws (4), 17034.		
7. Tighten Butt Plate Screws.		

* Use normal complement of Hand tools to Assemble as Required.

FINAL TECHNICAL PROCESS RECORD DATE

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., [illegible] REVISED AUG 26 1948

TPR-10

PART: 721-722 Final Assembly	PART No. Final Assembly
OPERATION: Final Assembly	OPER. No.: 5

SPECIMEN

PROCESS RECORD

EQUIPMENT:

MAX. PROD. PER HOUR: COOLANT:

STATION			TOOLS & GAUGES		TOOL HOLDERS & FIXTURES	
STEPS	SPEED	FEED	TYPE	No.	TYPE	No.
1) Check and set trigger pull at 4-5#			Trigger Scale 1/8" Screw Driver			
2) Position stock						
3 Insert magazine follower + spring						
4 Insert floor plate, Trigger guide plate, + Trigger guard						
5 Assemble fore + rear stock screws			1/4" Hex Screw Driver			
6) Insert + tighten recoil plug screw			1/8" Hex Screw Driver			
7) Tighten fore + rear stock screws			1/4" Hex Screw Driver			

COMPILED BY: APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: ~~TRIGGER ASSEMBLY~~ Trigger Assembly. PART No. [redacted]

OPERATION: ~~ASSEMBLY~~ Assemble Trigger Group. 17036Y OPER. No.: 6

STEP	TOOL & GAGES TYPE	NO.	REMARKS
1. Insert Trigger 17048 in Housing 17039 and install Trigger Pin 17037			Pin must be flush
2. Install Trigger Connector 17050			
3. Install Trigger Stop Screw 17053			
4. Install Trigger Adjusting Screw 17049 Butt End.			
5. Install Trigger Adjusting Screw 17049 front End, and Trigger Spring 17978			
6. Assemble following: a. Bolt Stop Release 17038 b. Safety Pivot Pin 17043 c. Safety 17040 d. Safety Detent Ball 17041 e. Safety Detent Spring 17042 f. Safety Snap Washer 17044			
7. Install Sear 17946, Safety Cam 17495, Sear Spring 17047 and dummy pins.	Dummy Pins	A-51468	
8. Adjust Butt End Trigger Adjusting screw			Apply pressure on Sear and tighten screw until Sear falls then back up 1/4 turn.
9. Adjust Trigger Stop Screw			Tighten Trigger Stop Screw until Trigger will not disengage Sear. Apply pressure on Sear and Trigger and back up Trigger Stop Screw until Sear falls.

*Use normal complement of hand tools to perform above assembly.

Retyped APR 22 1941

FINAL TECHNICAL PROCESS RECORD DATE MAR 20 1947

COMPILED BY M.H.Smith 3-18-47 APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H.H. SULLIVAN, INC.

TPR-9

PART: FINAL ASSEMBLY	PART No. M/721 & 722 FINAL ASSEMBLY
OPERATION: MARK SERIAL NUMBER ON BOLT	OPER. No.: 6

Changed Serial Numbers 4-9-47

PROCESS RECORD

EQUIPMENT: Gorton 3-U Engraver

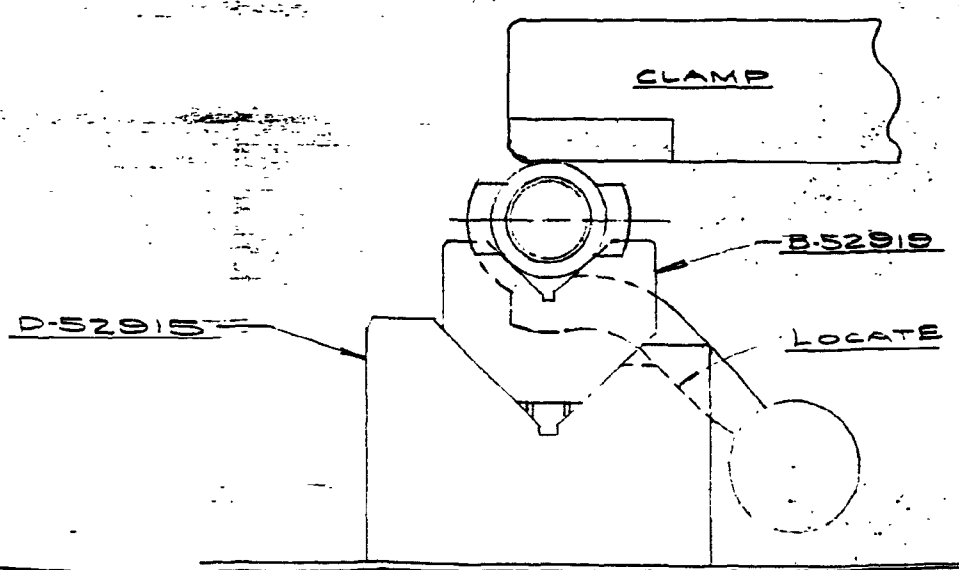
SPEED: FEED: Hand

MAX. PROD. PER HOUR: 50 COOLANT: None

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No.
1-Engraving Cutter	A-52926	1-Fixture	D-52915
1-Collet Bushing (Dwg. # B-80129W)	Gorton #9619-D	1-Adapter	B-52919
		1-Forming Guide	A-52925

NOTE: After Serial No. is engraved, Final Assembly operation on Bolt should be performed per Process Record for Part # 17255Y out.

SKETCH



COMPILED BY:	APPROVAL & DATE:
	12-27

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY	PART No. M/721 & 722 FINAL ASSEMBLY
OPERATION: MARK SERIAL NUMBER ON BOLT	OPER. No.: 6

OBSOLETE MAR 18 1947

PROCESS RECORD

EQUIPMENT: Gorton 3 U Engraver

SPEED:

FEED: Hand

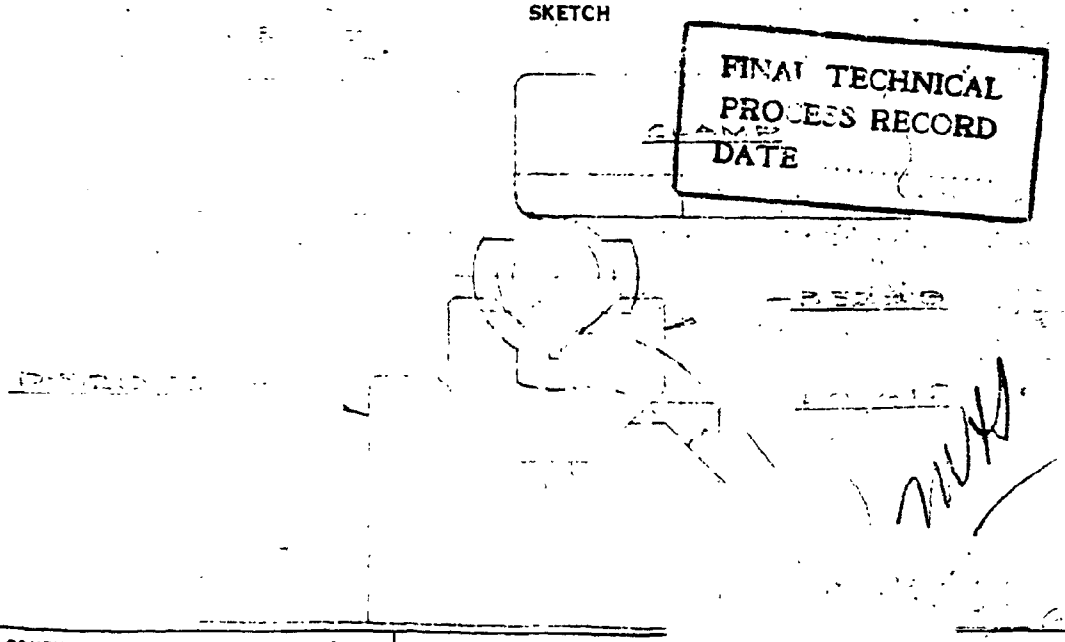
MAX. PROD. PER HOUR: 50

COOLANT: None

TOOLS & GAUGES		TOOL HOLDERS, JIGS & FIXTURES	
TYPE	No.	TYPE	No
1 Engraving Cutter	A 52926	1 Fixture	D-52919
1 Collet Bushing (Part of B Collet)	Gorton #9618 I	1 Adapter	B-52919
		1 Forming Guide	A-52[illegible]

Note after serial no. is engraved, Final assembly operation on bolt should be performed for Process Record for part 17255Y

SKETCH



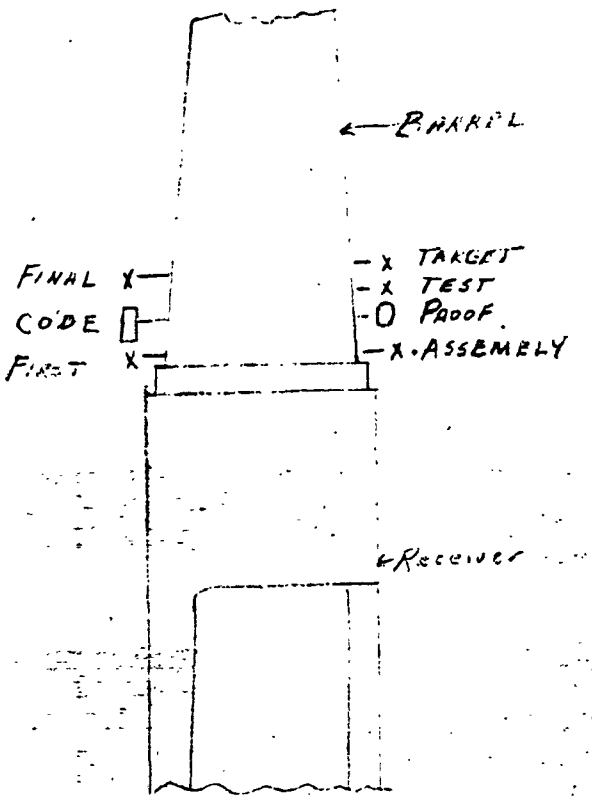
COMPILED BY:	APPROVAL & DATE

REMINGTON ARMS COMPANY, INC. REVISED Dec. 8 1948

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION TARGET & TEST FINAL INSPECTION	OPER. No.:

PROCESS RECORD — ILLUSTRATION SKETCH

LOCATION OF ASSEMBLY, INSPECTION, &
CODE STAMPS



COMPILED BY:	APPROVAL & DATE.

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

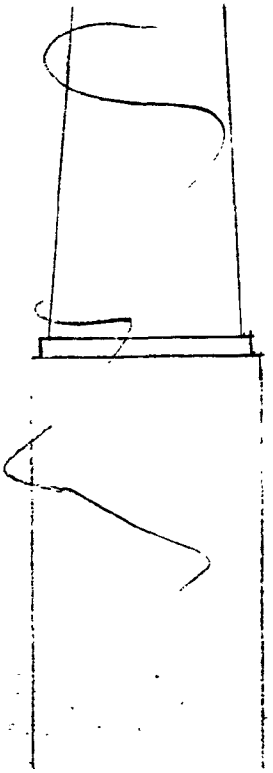
H. H. SULLIVAN INC.

TPR-7

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION TARGET & TEST FIDAL INSPECTION	OPER. No.:

PROCESS RECORD — ILLUSTRATION SKETCH

LOCATION OF ASSEMBLY, INSPECTION & CODE STAMPS



COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN INC.

TPR-11

PART: FINAL ASSEMBLY | PART No.

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1. Outside Appearance.				
a. Barrel	Visual	1. Color Uniform 2. No serious mars or scratches 3. Marking clear. 4. Rifling Present		
b. Sights	Visual	1. Color Uniform 2. No serious mars or scratches 3. Front Sight Ramp (a) Sides smooth-no vertical lines (b) Serrated (c) [redacted] Brass Visible To Regular Standard (d) Sight tight in dovetail 4. Rear Sight tight in dovetail		
Feeler Gage		(a) Opening Under Front End of rear sight at Barrel	.015	
		(b) No circular groove at weld		
c. Receiver	Visual	1. Uniform Color c. spring tension on step. b. Step can be moved if set 2. No serious mars or scratches 3. All edges smooth not sharp 4. Marking clear-not too deep 5. Plug Screws in Place. Side plug screw 1/2 visible 6. Gas hole present and fully visible 7. Top of rear tang & bolt handle stop smooth-Match rest of Receiver 8. Sides of ejection port and rails smooth-Match well with rest of Receiver		
d. Stock	Visual	1. No checks or mutilation that cannot be removed at Final 2. No sharp edges		
Feeler Gages		3. Barrel & Receiver Space uniform even	[redacted].030	
		4. Margin at right side rail wood [redacted]		
		steel	.020	
		5. Margin around tang wood	.020	
uniform appearance. Must be some opening		both sides even steel	.005	
		6. Gap at rear of Trigger Guard	[redacted]	[redacted]
		7. Margin at Trigger Guide Plate Good uniform appearance wood	[redacted]	
		steel	[redacted]10	

COMPILED BY: | APPROVAL & DATE: 7-11-13/20 147

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPS-11

OBSOLETE REVISED APR 8 1947

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		8. Bolt must seat on Receiver & clear wood		
		9. Barrel should bed at muzzle end of Stock		
e. Butt Plate	Visual	1. Uniform Color		
		2. No rough edges		
		3. Screws tight		
f. Trigger Guard	Visual	1. Uniform Color. Direction of polish lines uniform		
		2. No serious mars or scratches		
		3. Magazine Bottom tight on Stock		
		4. Guard Screws tight Heads flush or below guard		
9. TRIGGER		5. Clearance of Trigger & Guard		.040
2. Function		1. Visual - finish, color etc		
a. Heading		1. All calibers - Min. Insert heading plug in chamber. Bolt should lock. Accept if snug		
Nim 30-06	C-52093W			
.300 Sav.	C-52095W			
.300 Mag.	C-52097W			
.270 Win.	C-52093W			
.257 Rob.	C-52094W			
		2. All calibers - Max. Insert in chamber and close action. Bolt Handle must stand.		
Max. 30-06	C-52093V			
.300 Sav.	C-52095V			
.300 Mag.	C-52097V			
.270 Win.	C-52093V			
.257 Rob.	C-52094V			
b. Action		1. Load 2 dummies into magazine and depress full depth with wood plug and release quickly Dummy must not jump past receiver Rail.		
		2. Load 2 more dummies to fill magazine. Depress cartridges. Bolt must pass over top dummy but not clearance enough to allow 5 dummies in magazine.		
		3. Place 1 dummy in chamber. Feed dummy from magazine. Point of bullet from magazine must not strike primer of dummy in chamber. Push 2nd dummy back into magazine. Depress dummies in magazine and close		

COMPILED BY:	APPROVAL & DATE: MWJ 2/25/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

OBSOLETE REV: D APR 8 1947

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		bolt. Bolt must ride over dummy-no bind.		
		4. Operate bolt. Must eject dummy in chamber and feed and eject all dummies properly at normal speed without missed feeds, binding or stemming at top of chamber.		
b. Action (Cont.)		5. Operate Bolt 3 times empty and fire-no bind, Bolt Handle must raise and lower easily.		
		6. Apply pressure on Bolt Handle up and down-must not cramp or bind.		
		7. Close Bolt-must cam Follower down without cutting		
		8. Open and close Bolt forcibly 3 times-Firing Pin must not follow down.		
		9. Hold Bolt Handle down and pull Trigger-gun must fire instantly, no lag due to Firing Pin bind.		
		10. Cock gun and drop Bolt approx. 6" to floor. Must not fire until Trigger is pulled.		
		11. Check Safety. Should snap in Detent in both off and on position. Should work no harder than sample. Must clear wood. No sharp edges. Bolt must not open on Safe. Safe on-pull Trigger-must not fire-release safe-must not fire until Trigger is pulled.	—	—
		12. Check Trigger pull-no perceptible creep or bind.	6#	4#
		13. Depress Bolt Stop Release and remove Bolt		
3. Bolt a. Bolt Plug	Visual	1. Finish (a) Uniform color (b) No serious mars or scratches		

COMPILED BY:	APPROVAL & DATE: TWD 3/28/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

REMINGTON ARMS CO. INC.

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		2. Fit-Rotational Clearance of Bolt Plug on Firing Pin Head must permit match at end of Bolt Handle a left rear of Bolt with flat on Bolt Plug.		
b. Firing Pin Head	Visual	1. Finish (a) Color bright (b) No serious mars or scratches 2. No sharp edges		
c. Bolt Body AND HANDLE	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Back of Bolt Lugs must be smooth, no burrs (d) No brass visible except thin line at joints.		
d. Bolt Head	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Gas escape hole present.		
e. Extractor	Visual	1. Tension-no bind-use dummy to check if Extractor receives shell head without bind. 2. Check claw for sharp edge 3. Claw opposite Ejector. Check ejector pin for tightness		
f. Firing Pin		1. Release Firing Pin Head by turning Bolt Plug. Check Firing Pin Point-no mars.		
Flush Pin	B-52089	2. Check Firing Pin protrusion 3. Recock Firing Pin and replace in gun. 4. Pull Bolt back. Bolt stop must hold.	.075	.045
4. Mark and Check Tags etc.		1. See that gun is empty 2. Check for Assembly stamp 3. Match spec. tag with gun (a) Caliber (b) [redacted] (c) Model No. (d) Serial No. (e) Barrel Length		

COMPILED BY:

APPROVAL & DATE: MWJ 3/28/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

OBSOLETE
REV. APR 8 1947

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
		(f) Grade 4. All markings clear and legible 5. Check for agreement of Bolt and Receiver Serial Numbers. 6. Stamp First Inspection mark (see Sketch) 7. Send to Target and Test.		

COMPILED BY:

APPROVAL & DATE: [illegible] 3/28/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY | PART No. [redacted]

OPERATION: TARGET AND TEST | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No		MAX.	MIN.
Proof Test		1. Visual for First Inspection mark. 2. Fire one proof cartridge. Check for cracks, distortion etc. 3. Stamp proof mark on barrel (see sketch)		
Align Sights and Target Gun		1. Check for proof marks. 2. Place muzzle through port 3. Load 4 cartridges in magazine and one in chamber and fire to align sights. Check for feeding, extraction, ejection 4. Check tightness of sights 5. Fire 5 shots at 100 yards. All shots within 3" circle. 6. Stamp Target and Test mark (see sketch)		

all shots O.K. tested TWH 4/15/47

COMPILED BY: | APPROVAL & DATE: TWH 4/15/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TPR-61

OBSOLETE APR 16 1947

PART: FINAL ASSEMBLY	PART No.
OPERATION: TARGET AND TEST	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Proof Test		1. Visual for First Inspection mark. 2. Fire one proof cartridge. Check for cracks, distortion etc. 3. Stamp proof mark on barrel (see sketch)		
Align Sights and Target Gun		1. Check for proof marks. 2. Place muzzle through port 3. Load 4 cartridges in magazine and one in chamber and fire to align sights. Check for feeding, extraction, ejection 4. Check tightness of sights 5. Fire 5 shots at 100 yards. ~~All shots within 3" circle~~. 6. Stamp Target and Test mark (see sketch)	3½"	GROUP

* One flyer acceptable if felt to be caused by holding. (Same as M/81-141)

COMPILED BY:	APPROVAL & DATE: 5/16/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 1

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
	d. Stock (Cont.)		5. Margin around Tang wood both sides even steel	.020 .005	
			6. Gap at rear of Trigger Guard uniform appearance. ~~Must be some opening~~		
			7. Margin at Trigger Guide Plate Good uniform appearance		
			8. Bolt must seat on Receiver & clear wood		
			9. Barrel should bed at Muzzle end of Stock		
	e. Butt Plate	Visual	1. Uniform color 2. No rough edges 3. Screws tight		
	f. Trigger Guard	Visual	1. Uniform color. Direction of polish lines uniform 2. No serious mars or scratches 3. Magazine Bottom tight on Stock 4. Guard Screws tight Heads flush or below Guard 5. Clearance of Trigger & Guard		.040
	g. Trigger		1. Visual - Finish, color etc.		
2.	Function				
	a. Heading		1. All calibers - Min. Insert Heading Plug in Chamber. Bolt should lock. Accept if snug		
	Min. 30-06	C-52093W			
	.300 Sav.	C-52095W			
	.300 Mag.	C-52097W			
	.270 Win.	C-52093W			
	.257 Rob.	C-52094W			
			2. All calibers - Max. Insert in chamber and close action. Bolt Handle must stand		
	Max. 30-06	C-52093V			
	.300 Sav.	C-52095V			
	.300 Mag.	C-52097V			
	.270 Win.	C-52093V			
	.257 Rob.	C-52094V			
	b. Action		1. Load 2 dummies into Magazine and depress full depth with wood plug and release quickly Dummy must not jump past Receiver Rail.		
			2. Load 2 more dummies to fill Magazine. Depress cartridges Bolt must pass over top dummy		

COMPILED BY:	APPROVAL & DATE: 10/31-41-147

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

PART: FINAL ASSEMBLY | PART No. Final Assembly

OPERATION: FIRST INSPECTION | OPER. No.: 10

OBSOLETE REVISED MAR 25 1947

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No	USE	LIMITS MAX.	LIMITS MIN
Trigger Guard	Visual	1. Finish a. Uniform color b. No serious mars or scratches 2. ~~No bow in trigger guard~~ ? Check for tight. Should be flush or below Guard Screws		
Receiver	Visual	1. Finish Trigger must clear guard screw a. Uniform Color b. No serious mars or scratches 2. All exposed edges should be ~~chamfered~~. smooth - not sharp (Broken) 3. Scope screws ~~holes~~ present ? (all present - ok) 4. Firing pin head slot - free of multilation. Rear guard screw burred on threads (ok) 5. Magazine edge must be below bullet ramp edge. Case hole adjustment & fully visible		
Bolt Plug	Visual	1. Finish a. Uniform color b. No serious mars & scratches 2. Fit - Rotational clearance of bolt plug on F.P. Head must permit match at end of bolt handle at left rear of bolt with flat on bolt plug.		
Firing Pin Head	Visual	1. Finish a. Uniform Color b. No serious mars or scratches 2. No sharp edges. - ?		
Bolt	Visual	1. Finish a. Must be bright b. No serious mars or scratches c. Back of bolt lugs must be ~~ground finish~~ smooth to be a d. No brass visible except in corners of brazed joints. - ?		

COMPILED BY S. H. Quist | APPROVAL & DATE

REVISED AUG 26 1946

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PR 11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No. 10

OBSOLETE REVISED MAR 25 1947

PROCESS RECORD — INSPECTION

GAUGES	No.	USE	LIMITS Max	LIMITS Min.
		3. Rear Sight (Cont.) b. Both Sights aligned, square & central with Butt.		
Feeler Gage		4. Opening under front end or rear sight at barrel.	0.015	
Assembly Heading Plugs		1. All calibers - Min. Insert Heading Plug in Chamber and close Action Bolt should lock - accept if snug.		
Min. .30-06	C-52093W			
.300 Sav.	C-52095W			
.300 Mag.	C-52097W			
.270 Win.	C-52093W			
.257 Robts	C-52094W			
Max. .30-06	C-52093V	2. All calibers - Max. Insert in chamber & close Action - Bolt must ~~not lock and safe not go on.~~ stand.		
.300 Sav.	C-52095V			
.300 Mag.	C-52097V			
.270 Win.	C-52093V			
.257 Robts	C-52094V			
Function		1. Load (2) dummies into magazine & depress full depth with wood plug screw driver & release quickly - cartridge must not jump past Receiver rails.		
		2. Load 2 more to fill magazine-depress (4) cartridges-should have overdraw and Bolt must pass over top dummy.		
		3. Operate Bolt-must feed and eject properly at normal speed without missed feeds or binding or stemming at top of chamber		
		4. Load (1) dummy cartridge into chamber-Close Bolt with normal speed-extractor must ride over rim of dummy with no bind and open Bolt to eject dummy.		
		5. Operate Bolt (3) times and fire - no bind - Bolt.		

29 Place 1 dummy in chamber. Feed dummy from magazine. Point of bullet from magazine must not strike front of dummy in chamber

COMPILED BY: S. H. Quist	APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N.Y. REVISED AUG 26 19

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No.: 10

BULLET MAR 24 1941

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No	USE	LIMITS MAX	LIMITS MIN.
Assembly	Visual	1. See that gun is empty. 2. Check for assembly Stamp ~~left~~ side of Barrel 3. Match specification tag with gun for: a. Caliber marking b. Patent marking c. Model Number d. Serial Number (~~and Stock~~) e. Barrel overall length f. Grade 4. All markings to be clear & legible 5. Check for agreement of Bolt and Receiver Serial Numbers.		
Butt Plates	Visual	1. Finish a. Uniform color b. No rough edges c. ~~Edges Chamfered~~. 2. Butt Plate Screws (2) tight.		
Stock	Visual	1. No checks or mutilations that can not be repaired at final inspection 2. Safety Lever must clear stock. 3. ~~Stock Screws (2) tight.~~ 4. No sharp edges. 5. ~~Barrel must seat in [illegible] return to same spot when pulled away and pushed from side to side.~~		
Feeler Gage		6. Barrel Receiver space.	~~0.015~~ 1030	
Feeler Gage		7. Margin at right side rail - Wood	~~0.015~~ 0.030	
		Steel	0.010	
Feeler Gage		8. Margin around Receiver Tang-Wood	0.015	
		Steel	0.005	
Feeler Gage		9. Gap at Rear of Trigger Guard	~~0.015~~ 0.030	
Feeler Gage		10. Margin at Trigger Guide Plate-Steel	~~0.005~~ +.010	

COMPILED BY: S. H. QUIST	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., [illegible]

REVISED AUG 26 1946

H. H. SULLIVAN, INC.

TPR 11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No.: 10

OBSOLETE WAR [illegible]

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
Type	No.		Max.	Min.
Function		5. (Cont.) handle must raise and lower easily.		
		6. Apply pressure on Bolt Handle up & down - must not cramp or bind.		
		7. Close Bolt - must cam follower down in moving forward.		
		8. Open & close Bolt forcibly (3) times - firing pin must not follow down.		
		9. Hold Bolt Handle down & pull Trigger -gun must fire instantly no lag due to Firing Pin bind,		
		10. Bolt Handle must seat on receiver stop and clear stock.		
		11. Drop Butt 6" to floor - must not fire until trigger is pulled.		
		12. Safety should snap both on and off when pushed in either direction. Bolt must not open with safety on.		
Scale		13. Check Trigger pull - no perceptible creep or bind.	6#	4#
		14. Depress Bolt Stop Release & remove Bolt - no bind.		
Part with bolt inspection		15. Release Firing Pin by turning Bolt Plug - check Firing Pin point - no mars.		
Flush Pin	B-52089	16. Firing Pin Protrusion	0.075	0.045

COMPILED BY: S. H. Quist

APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., [illegible] REVISED AUG 2 2 [illegible]

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FIRST INSPECTION	OPER. No.: 10

OBSOLETE MAR 24 1947

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No	USE	LIMITS MAX.	LIMITS MIN.
Reassemble		1. Cock firing pin by retracting firing pinhead with special tool 2. Insert bolt past bolt stop - no bind. 3. Pull back bolt to test - bolt stop should hold.		
Stamp		1. First inspection mark in bolt handle slot of stock.		
		To Gallery for Target & Test		

COMPILED BY. S. H. Quist

APPROVAL & DATE. REVISED AUG 25 [redacted]

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FIRST INSPECTION	OPER. No.: 10

OBSOLETE MAR 24 1947

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Bolt Head	Visual	1. Finish a. Must be bright b. No serious mars or scratches Gas escape hole present		
Extractor	Visual	1. Tension - no bind - use dummy shell to check if extractor receives shell head without bind. 2. Check Claw for sharp edge. Claw appears sharp		
Safety	Visual	1. Finish a. Color uniform b. No serious mars or scratches 2. ~~Safety Detent ball must snap fully both ways~~ Check function		
Barrel Bracket	Visual	1. Barrel Bracket must rest against recoil pad in stock. 2. Chamfered edge should face barrel.	Recoil pad? Check for a bevel?	
Barrel	Visual	1. Finish a. Color uniform b. No serious mars or scratches c. No pilot marks at crowning 2. Rifling - present marking		
Sights	Visual	1. Finish a. Color Uniform b. No serious mars or scratches. 2. Front Sight a. Top of Ramp - Cross marked b. No bright brass visible c. Dovetail tight in base-test with copper hammer. 3. Rear Sight a. Dovetail tight in base-test with copper hammer		

COMPILED BY: S. H. Quist

APPROVAL & DATE

REVISED AUG 26 [illegible]

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

R-11

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Trigger Guard	Visual	1. Finish a. Uniform color b. No serious mars or scratches 2. No bow in trigger guard		
Receiver	Visual	1. Finish a. Uniform Color b. No serious mars or scratches 2. All exposed edges should be chamfered. 3. Scope screw holes present 4. Firing pin head slot - free of multilation. 5. Magazine edge must be below bullet ramp edge.		
Bolt Plug	Visual	1. Finish a. Uniform color b. No serious mars & scratches 2. Fit - Rotational clearance of bolt plug on F.P. Head must permit match at end of bolt handle at left rear of bolt with flat on bolt plug.		
Firing Pin Head	Visual	1. Finish a. Uniform Color b. No serious mars or scratches 2. No sharp edges.		
Bolt	Visual	1. Finish a. Must be bright b. No serious mars or scratches c. Back of bolt lugs must be ground finish d. No brass visible except in corners of brazed joints.		

COMPILED BY: S. H. Quist | APPROVAL & DATE: WHL 8/20/42

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Bolt Head	Visual	1. Finish a. Must be bright b. No serious mars or scratches		
Extractor	Visual	1. Tension - no bind - use dummy shell to check if extractor receives shell head without bind. 2. Check Claw for sharp edge.		
Safety	Visual	1. Finish a. Color uniform b. No serious mars or scratches 2. Safety Detent ball must snap safety both ways.		
Barrel Bracket	Visual	1. Barrel Bracket must rest against recoil pad in stock. 2. Chamfered edge should face barrel.		
Barrel	Visual	1. Finish a. Color uniform b. No serious mars or scratches c. No pilot marks at crowning 2. Rifling - present		
Sights	Visual	1. Finish a. Color Uniform b. No serious mars or scratches. 2. Front Sight a. Top of Ramp - Cross marked b. No bright brass visible c. Dovetail tight in base-test with copper hammer. 3. Rear Sight a. Dovetail tight in base-test with copper hammer		

COMPILED BY: S. H. Quist | APPROVAL & DATE: MH 8/19/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR 11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No. 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
Type	No.		Max.	Min.
		3. Rear Sight (Cont.) b. Both Sights aligned, square & central with Butt.		
Feeler Gage		4. Opening under front end or near sight at barrel.	0.015	
Assembly Heading Plugs Min. .30-06 .300 Sav. .300 Mag. .270 Win. .257 Robts	 C-52093W C-52095W C-52097W C-52093W C-52094W	1. All calibers - Min. Insert Heading Plug in Chamber and close Action Bolt should lock - accept if snug. 2. All calibers - Max. Insert in chamber & close Action - Bolt must not lock and safe not go on.		
Max. .30-06 .300 Sav. .300 Mag. .270 Win. .257 Robts	C-52093V C-52095V C-52097V C-52093V C-52094V			
Function		1. Load (2) dummies into magazine & depress full depth with wood plug screw driver & release quickly - cartridge must not jump past Receiver rails. 2.. Load 2 more to fill magazine-depress (4) cartridges-should have overdraw and Bolt must pass over top dummy. 3. Operate Bolt-must feed and eject properly at normal speed without missed feeds or binding of stemming at top of chamber 4. Load (1) dummy cartridge into chamber-Close Bolt with normal speel-extractor must ride over rim of dummy with no bind and open Bolt to eject. dummy. 5. Operate Bolt (3) times and fire - no bind - Bolt.		

COMPILED BY: S. H. Quist	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR 11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
Type	No.		Max.	Min.
Function		5. (Cont.) handle must raise and lower easily.		
		6. Apply pressure on Bolt Handle up & down - must not cramp or bind.		
		7. Close Bolt - must cam follower down in moving forward.		
		8. Open & close Bolt forcibly (3) times - firing pin must not follow down.		
		9. Hold Bolt Handle down & pull Trigger -gun must fire instantly no lag due to Firing Pin bind,		
		10. Bolt Handle must seat on receiver stop and clear stock.		
		11. Drop Butt 6" to floor - must not fire until trigger is pulled.		
		12. Safety should snap both on and off when pushed in either direction.		
Scale		13. Check Trigger pull - no perceptible creep or bind.	6#	4#
		14. Depress Bolt Stop Release & remove Bolt - no bind.		
		15. Release Firing Pin by turning Bolt Plug - check Firing Pin point - no mars.		
Flush Pin	B-52089	16. Firing Pin Protrusion	0.075	0.045

COMPILED BY: S. H. Quist | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Assembly	Visual	1. See that gun is empty.		
		2. Check for assembly Stamp left side of Barrel		
		3. Match specification tag with gun for:		
		a. Caliber marking		
		b. Patent marking		
		c. Model Number		
		d. Serial Number		
		e. Barrel overall length		
		f. Grade		
		4. All markings to be clear & legible		
		5. Check for agreement of Bolt and Receiver Serial Numbers.		
Butt Plates	Visual	1. Finish		
		a. Uniform color		
		b. No rough edges		
		c. Edges Chamfered.		
		2. Butt Plate Screws (2) tight.		
Stock	Visual	1. No checks or mutilations that can not be repaired at final inspection		
		2. Safety Lever must clear stock.		
		3. Stock Screws (2) tight.		
		4. No sharp edges.		
		5. Barrel must seat in forend and return to same spot when pulled away and pushed from side to side.		
Feeler Gage		6. Barrel Receiver space.	0.015	
Feeler Gage		7. Margin at right side rail - Wood	0.015	
		Steel	0.010	
Feeler Gage		8. Margin around Receiver Tang-Wood	0.015	
		Steel	0.005	
Feeler Gage		9. Gap at Rear of Trigger Guard	0.015	0.030
Feeler Gage		10. Margin at Trigger Guide Plate-Steel	0.005	

COMPILED BY: S. H. QUIST	APPROVAL & DATE: [illegible] 1/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Reassemble		1. Cock firing pin by retracting firing pinhead with special tool 2. Insert bolt past bolt stop - no bind. 3. Pull back bolt to test - bolt stop should hold.		
Stamp		1. First inspection mark in bolt handle slot of stock.		
		To Gallery for Target & Test		

COMPILED BY: S. H. Quist

APPROVAL & DATE: WHS 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1.	Outside Appearance.				
	a. Barrel	Visual	1. Color Uniform 2. No serious mars or scratches 3. Marking clear. 4. Rifling Present		
	b. Sights	Visual	1. Color Uniform 2. No serious mars or scratches 3. Front Sight Ramp (a) SIDES SMOOTH - NO VERTICAL LINES Serrated (b) No Brass Visible (c) Sight tight in dovetail 4. Rear Sight tight in dovetail		
	Feeler Gage		(a) Opening Under Front End of rear sight at Barrel (b) NO CIRCULAR GROOVE AT WELD.	.015	
	c. Receiver	Visual	1. Uniform Color 2. No serious mars or scratches 3. All edges smooth not sharp 4. Marking clear—NOT TOO DEEP 5. Plug Screws in Place. side plug screw ½ visible 6. Gas hole present and fully visible 7. Top of rear tang & bolt handle stop smooth - match rest of receiver		
	8. Sides of ejection port and rails smooth - match well with rest of receiver				
	d. Stock	Visual	1. No checks or mutilation that cannot be removed at Final ~~2. Safety must clear wood~~ 2. No sharp edges		
	Feeler Gages	2	3. Barrel & Receiver Space	.030	flush
		3	4. Margin at right side rail wood		flush
		4	steel	.020	
		5	5. Margin around tang wood	.020	
			BOTH SIDES EVEN. steel	.005	
		6	6. Gap at rear of Trigger Guard	.030	.015
		7	7. Margin at Trigger Guide Plate handle wood	.010	
			steel	.010	
		8	8. Bolt must seat on receivers clear wood		
		9	9. Barrel should bed at muzzle end of stock		
	e. Butt Plate	Visual	1. Uniform Color 2. No rough edges 3. Screws tight		

WWD

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC. Plant

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
f. Trigger Guard	Visual	1. Uniform Color. Direction of polishlines uniform 2. No serious mars or scratches 3. Magazine Bottom tight on stock 4. Guard Screws tight Heads flush or below guard 5. Clearance of trigger & guard		.075
2. Function				
a. Heading		1. All calibers - Min.		
Min 30-06	C-52093W	Insert heading plug in chamber. Bolt should lock. Accept if snug		
.300 Sav.	C-52095W			
.300 Mag.	C-52097W			
.270 Win.	C-52093W	2. All calibers - Max.		
.257 Robt	C-52094W	Insert in chamber and close action. Bolt Handle must stand.		
Max.30-06	C-52093V			
.300 Sav.	C-52095V			
.300 Mag.	C-52097V			
.270 Win.	C-52093V			
.257 Rob.	C-52094V			
b. Action		1. Load 2 dummies into magazine and depress full depth with wood plug and release quickly Dummy must not jump past receiver Rail.		
		2. Load 2 more dummies to fill magazine. Depress cartridges. Bolt must pass over top dummy but not clearance enoughtto allow 5 dummies in magazine.		
		3. Place 1 dummy in chamber. Feed dummy from magazine. Point of bullet from magazine must not strike primer of dummy in chamber. Push 2nd dummy back into magazine. Depress dummies in magazine and close bolt. Bolt must ride over dummy - no bind.		
		4. Operate bolt. Must eject dummy in chamber and feed and eject all dummies properly at normal speed without missed feeds, binding or stemming at top of chamber.		

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REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
b. Action (Cont.)		5. Operate Bolt 3 times empty and fire - no bind, Bolt Handle must raise and lower easily. 6. Apply pressure on Bolt Handle up and down - must not cramp or bind. 7. Close Bolt - must cam Follower down. 8. Open and close Bolt forcibly 3 times - Firing Pin must not follow down. 9. Hold Bolt Handle down and pull Trigger - gun must fire instantly, no lag due to Firing Pin bind. ~~10. Bolt must seat on Receiver and clear wood.~~ 16 ~~11.~~ Cock gun and drop Bolt approx. 6" to floor. Must not fire until trigger is pulled. 11 ~~12.~~ Check Safety. Should snap in Detent in both off and on position. Bolt must not open on Safe. Safe on - full trigger - must not fire - release safe - must not fire until trigger is pulled. 12 ~~13.~~ Check trigger pull - no perceptible creep or bind. 13 ~~14.~~ Depress Bolt Stop Release and remove Bolt		
3. Bolt a. Bolt Plug	Visual	1. Finish (a). Uniform color (b) No serious mars or scratches. 2. Fit-Rotational Clearance of Bolt Plug on Firing Pin Head must permit match at end of Bolt Handle a left rear of Bolt with flat on Bolt Plug.		
b. Firing Pin Head	Visual	1. Finish (a) Color bright (b) No serious mars or scratches		

SHOULD WORK NO HARDER THAN SAMPLE. MUST CLEAR

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

	GAUGES		USE	LIMITS	
	TYPE	No.		MAX.	MIN.
	b. Firing Pin Head (Cont.)		2. No sharp edges		
	c. Bolt Body	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Back of Bolt Lugs must be smooth, no burrs (d) No brass visible except thin line at joints.		
	d. Bolt Head	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Gas escape hole present.		
	e. Extractor	Visual	1. Tension - no bind - use dummy to check if Extractor receives shell head without bind. 2. Check claw for sharp edge 3. Claw opposite Ejector		
	f. Firing Pin		1. Release Firing Pin Head by turning Bolt Plug. Check Firing Pin Point - no mars.		
	Flush Pin	B-52089	2. Check Firing Pin protrusion 3. Recock Firing Pin and replace in gun. 4. Pull Bolt back. Bolt stop must hold	.075	.045
4.	Mark and Check Tags etc.		1. See that gun is empty. 2. Check for Assembly stamp 3. Match spec. tag with gun. (a) Caliber (b) Patent (c) Model No. (d) Serial No. (e) Barrel Length (f) Grade 4. All markings clear and legible. 5. Check for agreement of Bolt and Receiver Serial Numbers.		

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REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FIRST INSPECTION	OPER. No.: 10

PROCESS RECORD — INSPECTION

	GAUGES		USE	LIMITS	
	TYPE	No.		MAX.	MIN.
4.	(Cont.)		6. Stamp First Inspection mark (see Sketch) 7. Send to Target and Test.		

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

1

PART: Final Assembly | PART No.

OPERATION: FIRST INSPECTION | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1. Outside Appearance				
a. Barrel	Visual	1. Color Uniform 2. No serious Mars or Scratches 3. Marking Clear 4. Rifling present.		
b. Sights	Visual	1. Color uniform 2. No serious mars or scratches 3. Front sight Ramp : (a) serrated (b) No brass visible (c) sight tight in dovetail 4. Rear sight tight in dovetail		
Feeler Gage		(a) opening under front end of rear sight at barrel	.015	
c. Receiver	Visual	1. Uniform color 2. No serious Mars or scratches 3. All Edges smooth-not sharp 4. Marking clear. 5. Plug screws in place 6. Gas hole present & fully visible		
d. Stock	Visual	1. No checks or mutilation that cannot be removed at Final 2. Safety must clear wood. 3. No sharp edges	.030	
Feeler Gages		4. Barrel & Receiver Space	.030	
		5. Margin at right side rail Wood	.030	
		steel	.030	
		6. Margin around Tang Wood	.020	
		steel	.005	
		7. Gap at rear of trigger guard	.030	.01
		8. Margin at Trigger Guide Plate Wood	.010	
		steel	.010	

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REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

PART: Final assembly | PART No.

OPERATION: Final Inspection | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
e Butt Plate	Visual	1. Uniform color 2. No Rough edges 3. Screws tight.		
f. Trigger Guard	Visual	1. Uniform Color 2 No serious mars or scratches 3. Magazine Bottom tighten Stock. 4. Guard screws tight Heads Flush or below guard		
2. Function a. Heading min 30-06 .300 Sav. .300 Mag. .270 Win .257 Rob.	C-52093W C-52095W C-52097W C-52093W C-52094W	1. all calibres - Min Insert heading plug in chamber, Bolt should lock. accept if snug. 2 all calibres - Max Insert in chamber and close action. Bolt handle must stand.		
Max .3006 .300 Sav. .300 Mag .270 Win. .257 Rob.	C-52093V C-52095V C-52097V C-52093V C-52094V			
b action		1. Load 2 dummies into magazine and depress [illegible] with wood plug and release quickly. Dummy must [illegible] partially feed. 2. [illegible] dummies to feed [illegible] Depress cartridges. Bolt must pass over top dummy but not clearance enough to allow 3 dummies to [illegible]		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-11

3

PART: Trap end Final assembly | PART No.

OPERATION: Final Inspection | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
action (continued)		3. Place 1 dummy in chamber. Feed dummy from magazine. Point of bullet from magazine must just strike primer of dummy in chamber. Push 2 dummy back into magazine. Depress dummies in magazine and close bolt. Bolt handle can dump - no bind. 4. Operate bolt. Must eject dummy in chamber and feed and eject all dummies fully at normal speed without missed feeds, binding or stemming at top of chamber. 5. Operate bolt 3 times and empty and fire - no bind. Bolt handle must raise and lower easily 6 apply pressure on bolt handle up and down - must not cramp or bind 7 Close bolt - must cam		

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H. H. SULLIVAN, INC.

TPR-11

4

PART: Final assembly | PART No.

OPERATION: First Inspection | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Continued		8 Open and close bolt forcibly 3 times - firing pin must not follow down.		
		9 Hold Bolt Handle down and pull trigger - gun must fire instantly, no lag due to firing pin bind		
		10 Bolt must seat on receiver and clear lugs.		
		11 Cock gun and drop bolt approx 6" to floor - must not fire until trigger is pulled.		
		12. Check safety. should snap in detent in both off and on position. Bolt must not open on safe		
		13 Check trigger pull - no perceptible creep or bind	6#	4#
		14 Release bolt stop - release and [illegible]		
3 Bolt a Bolt Plug		1. Finish a uniform color b no serious marks or scratches		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

M. H. SULLIVAN, INC.

TPR-11

PART: Final assembly

PART No.

OBSOLETE Visual Inspection

OPER. No.: 10

PROCESS RECORD — INSPECTION

MAR 24 1947

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Bolt plug (carbine)	Visual	2 Fit - Rotational clearance of bolt plug on FP head 1 + pivot notch at end of bolt handle a left rear of bolt with flat on bolt plug.		
b Firing Pin head	Visual	1. Finish a. Like bright b. No serious major scratches 2. No sharp edges		
c Bolt Body	Visual	1. Finish a. Bright b. No serious major scratches c. Back of bolt lug must be smooth, no burrs d. No brass visible except thin line at joints.		
d. Bolt Head	Visual	1. Finish a. Bright b. No serious major [illegible] c. [illegible]		

COMPILED BY:

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

PART: Final Assembly | PART No.

OPERATION: First Inspection | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
e. Extractor	Usual	1. Recession - no bind - use dummy to check if extractor recess shell head without bind. 2. Check claw for sharp edge. 3. Clean offside ejector.		
f. Firing Pin		1. Release Firing Pin Head by turning Rear plug. Check Firing Pin print - no mars.		
Check Pin	B52089	2. Check F.P. protrusion	.075	.045
		3. Recock Firing Pin and clean in Gun		
		4. Pull bolt back. Bolt seals inner tube.		
4 Mark and check tags etc.		1. See that gun is empty 2- check for assembly stamp 3. Match Spec. tag with gun a Caliber d Serial no b Patent e Barrel length c model no f grade 4 all markings clear and legible		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

PART: Final assembly | PART No. 7

OPERATION: First Inspection | OPER. No.: 10

OBSOLETE

PROCESS RECORD — INSPECTION

MAR 24 1961

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
4 continued		5 check for agreement of Bolt and receiver serial numbers 6. Stamp I at inspection mark (see sheet) 7. Send to Target and Dot.		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

PART: FINAL ASSEMBLY | PART No. Final Assembly

OPERATION: FIRST INSPECTION | OPER. No. 10

PROCESS RECORD — INSPECTION

OBSOLETE

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Bolt Head	Visual	1. Finish a. Must be bright b. No serious mars or scratches		
Extractor	Visual	1. Tension - no bind - use dummy shell to check if extractor receives shell head without bind. 2. Check Claw for sharp edge.		
Safety	Visual	1. Finish a. Color uniform b. No serious mars or scratches 2. Safety Detent ball must snap safety both ways.		
Barrel Bracket	Visual	1. Barrel Bracket must rest against recoil pad in stock. 2. Chamfered edge should face barrel.		
Barrel	Visual	1. Finish a. Color uniform b. No serious mars or scratches c. No pilot marks at crowning 2. Rifling - present		
Sights	Visual	1. Finish a. Color Uniform b. No serious mars or scratches. 2. Front Sight a. Top of Ramp - Cross marked b. No bright brass vivible c. Dovetail tight in base-test with copper hammer. 3. Rear Sight a. Dovetail tight in base-test with copper hammer		

COMPILED BY: H. Sweet | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY | PART No. [redacted]

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1.	Outside Appearance.				
	a. Barrel	Visual	1. Color Uniform 2. No serious mars or scratches 3. Marking clear. 4. Rifling Present		
	b. Sights	Visual	1. Color Uniform 2. No serious mars or scratches 3. Front Sight Ramp (a) Sides smooth-no vertical lines (b) Serrated (c) [redacted] Brass Visible TO REGULAR STANDARDS (d) Sight tight in dovetail 4. Rear Sight tight in dovetail		
	Feeler Gage		(a) Opening Under Front End of rear sight at Barrel	.015	
			(b) No circular groove at weld		
	c. Receiver	Visual	1. Uniform Color (C) SPRING TENSION ON STEP (D) STEP CAN BE MOVED & SET 2. No serious mars or scratches 3. All edges smooth not sharp 4. Marking clear-not too deep 5. Plug Screws in Place. Side plug screw 1/2 visible 6. Gas hole present and [redacted] visible 7. Top of rear tang & bolt handle stop smooth-Match rest of Receiver 8. Sides of ejection port and rails smooth-Match well with rest of Receiver		
	d. Stock	Visual	1. No checks or mutilation that cannot be removed at final 2. No sharp edges		
	Feeler Gages		3. Barrel & Receiver Space UNIFORM & EVEN [redacted] 4. Margin at right side rail [redacted] STEEL .020, WOOD .030 [redacted] 5. Margin around tang both sides even	wood .020 steel .005	
	UNIFORM IN APPEARANCE MUST BE SOME OPENING →		6. Gap at rear of Trigger Guard [redacted] 7. Margin at Trigger Guide Plate [redacted] GOOD UNIFORM APPEARANCE [redacted]		

COMPILED BY:

APPROVAL & DATE: 11/3/41

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. SULLIVAN, INC.

PART: FINAL ASSEMBLY | PART No.

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		2. Fit-Rotational Clearance of Bolt Plug on Firing Pin Head must permit match at end of Bolt Handle a left rear of Bolt with flat on Bolt Plug.		
b. Firing Pin Head	Visual	1. Finish (a) Color bright (b) No serious mars or scratches 2. No sharp edges		
c. Bolt Body AND HANDLE	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Back of Bolt Lugs must be smooth, no burrs (d) [redacted] brass visible [redacted] — thin line at joints.		
d. Bolt Head	Visual	1. Finish (a) Bright (b) No serious mars or scratches (c) Gas escape hole present.		
e. Extractor	Visual	1. Tension-no bind-use dummy to check if Extractor receives shell head without bind. 2. Check claw for sharp edge 3. Claw opposite Ejector — 4. CHECK EXTRACTOR PIN FOR TIGHTNESS		
f. Firing Pin		1. Release Firing Pin Head by turning Bolt Plug. Check Firing Pin Point-no mars.		
Flush Pin	B-52089	2. Check Firing Pin protrusion 3. Recock Firing Pin and replace in gun. 4. Pull Bolt back. Bolt stop must hold.	.075	.045
4. Mark and Check Tags etc.		1. See that gun is empty 2. Check for Assembly stamp 3. Match spec. tag with gun (a) Caliber [redacted] (c) Model No. (d) Serial No. (e) Barrel Length		

COMPILED BY:

APPROVAL & DATE: [signature] 3/28/61

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

M. SULLIVAN, INC.

PART: FINAL ASSEMBLY | PART No.

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		bolt. Bolt must ride over dummy-no bind.		
		4. Operate bolt. Must eject dummy in chamber and feed and eject all dummies properly at normal speed without missed feeds, binding or stemming at top of chamber.		
b. Action (Cont.)		5. Operate Bolt 3 times empty and fire-no bind, Bolt Handle must raise and lower easily.		
		6. Apply pressure on Bolt Handle up and down-must not cramp or bind.		
		7. Close Bolt-must cam Follower down. WITHOUT CUTTING		
		8. Open and close Bolt forcibly 3 times-Firing Pin must not follow down.		
		9. Hold Bolt Handle down and pull Trigger-gun must fire instantly, no lag due to Firing Pin bind.		
		10. Cock gun and drop Bolt approx. 6" to floor. Must not fire until Trigger is pulled.		
		11. Check Safety. Should snap in Detent in both off and on position. Should work no harder than sample. Must clear wood. No sharp edges. Bolt must not open on Safe. Safe on-pull Trigger-must not fire-release safe-must not fire until Trigger is pulled.		
		12. Check Trigger pull-no perceptible creep or bind.	6#	4#
		13. Depress Bolt Stop Release and remove Bolt		
3. Bolt a. Bolt Plug	Visual	1. Finish (a) Uniform color (b) No serious mars or scratches		

COMPILED BY: | APPROVAL & DATE: 7-6-5/2-101

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

PART: FINAL ASSEMBLY | PART No. [redacted]

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
		8. Bolt must seat on Receiver & clear wood		
		9. Barrel should bed at muzzle end of Stock		
e. Butt Plate	Visual	1. Uniform Color		
		2. No rough edges		
		3. Screws tight		
f. Trigger Guard	Visual	1. Uniform Color. Direction of polish lines uniform		
		2. No serious mars or scratches		
		3. Magazine Bottom tight on Stock		
		4. Guard Screws tight Heads flush or below guard		.040
9 Trigger		5. Clearance of Trigger & Guard		[illegible]
2. Function		1. Visual-Finish, Color Etc.		
a. Heading		1. All calibers - Min. Insert heading plug in chamber. Bolt should lock. Accept if snug		
Nim 30-06	C-52093W			
.300 Sav.	C-52095W			
.300 Mag.	C-52097W			
.270 Win.	C-52093W			
.257 Rob.	C-52094W			
		2. All calibers - Max. Insert in chamber and close action. Bolt Handle must stand.		
Max. 30-06	C-52093V			
.300 Sav.	C-52095V			
.300 Mag.	C-52097V			
.270 Win.	C-52093V			
.257 Rob.	C-52094V			
b. Action		1. Load 2 dummies into magazine and depress full depth with wood plug and release quickly Dummy must not jump past receiver Rail.		
		2. Load 2 more dummies to fill magazine. Depress cartridges. Bolt must pass over top dummy but not clearance enough to allow 5 dummies in magazine.		
		3. Place 1 dummy in chamber. Feed dummy from magazine. Point of bullet from magazine must not strike primer of dummy in chamber. Push 2nd dummy back into magazine. Depress dummies in magazine and close		

COMPILED BY:

APPROVAL & DATE: [illegible]

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

Smith

PART: FINAL ASSEMBLY	PART No.
OPERATION: TARGET AND TEST	OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No		MAX.	MIN.
Proof Test		1. Visual for First Inspection mark. 2. Fire one proof cartridge. Check for cracks, distortion etc. 3. Stamp proof mark on barrel (see sketch)		
Align Sights and Target Gun		1. Check for proof marks. 2. Place muzzle through port 3. Load 4 cartridges in magazine and one in chamber and fire to align sights. Check for feeding, extraction, ejection 4. Check tightness of sights 5. Fire 5 shots at 100 yards. ~~All shots within 3" circle.~~ 6. Stamp Target and Test mark (see sketch)	3 1/2"	Group *

* One flyer acceptable if felt to be caused by holding (Same as M181-141)

COMPILED BY:	APPROVAL & DATE: Hurd 1/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY | PART No.

OPERATION: FIRST INSPECTION | OPER. No.: 10

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
		(f) Grade 4. All markings clear and legible 5. Check for agreement of Bolt and Receiver Serial Numbers. 6. Stamp First Inspection mark (see Sketch) 7. Send to Target and Test.		

COMPILED BY:

APPROVAL & DATE: 11-19 3/26/47

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

M. H. SULLIVAN, INC.

TPR-19

PART: Final Assembly 1 PART No.

OBSOLETE

First Inspection

Component	Check	Key Points
Assembly	Chamber, Magazine & Receiver	No ammunition rifle empty, follower visible.
	Assembly Stamp	Left side of barrel.
	Specification Tag	Match with gun a. Caliber Marking b. Patent Marking c. Model Number d. Serial Number e. Barrel overall length f. Grade
	All Marking	Clear & Legible
Stock	No bad checks or multilations.	That cannot be repaired at final inspection.
	Fit along barrel & receiver	Max. gap 0.015
	Margin at Receiver rail, right side	Max 0.010 steel or 0.015 wood.
	No sharp edges	
	Margin around receiver tang	Wood max. 1/64", steel max. 0.005"
	Opening at rear of trigger guard	Min. 0.015 Go. & Max. 0.030 No. Go.
	Safe Lever	Must clear stock
	Steel margin at Trigger Guard	Max. 0.005

COMPILED BY: J. H. Grant APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-19

PART: Final Assembly	2	PART No.

ORIGINAL

First Inspection

Component	Check	Key Points
Stock	Stock Screws (2)	Tight
	Butt Plate	Present
	Barrel Must Seat	Neither Springy or dead.
	Butt Plate Screws (2)	Tight
Sights	Color	Uniform, good finish, marks & burrs slight
Front	Top of Ramp	Cross matted
	Ramp	No Brass visible
	~~Dead Bolt Shape~~	~~Blade stoped at front of bead~~.
	Dovetail Tight in Base.	Test with copper hammer.
Rear	Tight in Dovetail	Test with copper hammer.
	Opening under front end.	At barrel, Max. 0.015
	Both sights aligned and square. Sights central	Lined up with butt.

COMPILED BY: L. H. Quast | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

FR-19

PART: Final Assembly	3	PART No.

OBSOLETE

First Inspection

Component	Check	Key Points
Barrel	Finish	Color uniform, no mars or scratches.
	Crowning	Present - no pilot marks
	Rifling	Present
Receiver	Finish	Color uniform, no mars or scratches or burrs.
	Sharp edges	All exposed edges should be chamfered.
	Scope Hole Screws	Present
	Bolt Hole	Good finish per sample
	Firing Pin Head Slot	Not jammed at rear.
	Magazine Edge	Must be below bullet ramp edge
Bolt	Finish	Bright, Mars & Burrs slight
	Rear of Locking Lugs	Good finish
Bolt Plug	Finish -	Uniform color
	Fit	Ledge match with bolt Ledge, left rear.
Firing Pin Head	Finish	Color uniform
	Outside, edge, rear end.	Not sharp

COMPILED BY: J. H. Quest | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-19

PART: Final Assembly	4	PART No.

REBUILT

First Inspection

Component	Check	Key Points
Bolt Head	Finish	Bright - no mars or scratches
	Face	Good Finish
	Firing Pin Hole	Not excessively large.
Extractor	Tension, No bind	Use dummy shell to check if extractor receives shell head without bind.
	Claw	Sharp edge.
Barrel Bracket	Assembly	Barrel bracket must rest against recoil pad in stock. Chamfered edge should face barrel.
Safety	Sear lift	Safety must lift sear 0.010 max. Sight thru inspection hole.
	Safety Dentent Ball	Must snap safety both ways.

COMPILED BY: S. H. Quest | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-18

PART: Final Assembly	5	PART No.

First Inspection

Component	Check	Key Points
Trigger Guard	Finish	Color Uniform - slight mars or scratches.
	Fit	No bow in trigger guard after assembly
Heading	All calibers - Min.	Insert heading plug in chamber & close action Bolt should lock - accept if snug.
	All calibers - Max.	Insert in chamber & close action - bolt must not lock and safe not go on.
Function	Load 2 dummies into magazine	Depress full depth with screw driver & release quickly - cartridges must not jump past receiver rails.
	Load 2 more to fill magazine	Depress 4 cartridges - should have overdraw and bolt must pass over top dummy.
	Operate bolt	Must feed & eject properly at normal speed without missed feeds or binding or steaming at top of chamber.

COMPILED BY: S. H. Quest | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

[redacted]

FPR-19

PART: Final Assembly	6	PART No.

Component	Check	Key Points
Function Cont.	Load 1 dummy cartridge into chamber - ~~Close bolt with normal speed~~	~~Close bolt with normal speed~~ - extractor must ride over rim of dummy and no bind ~~and open bolt to eject dummy~~.
	Operate bolt - 3 times and fire.	No bind - bolt handle raises and lowers easily
	Apply pressure on bolt handle - up & down	Must not cramp or bind.
	Open bolt, twist firing pin head to right & close bolt slowly	Firing Pin Head must not catch on receiver.
	Repeat above test to left.	Ditto
	Close Bolt	Must cam follower down in moving forward.
	Follow Down Test - open & close bolt forcibly 3 times.	Firing pin must not follow down.
	Hold Bolt Handle down and pull trigger	Gun must fire instantly no lag due to firing pin head bind.

COMPILED BY: S. H. Quist | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-19

PART: Final Assembly

PART No.

First Inspection

Component	Check	Key Points
Function	Bolt Handle	Must seat on receiver stop and clear stock.
	Jar off Test-drop butt 6" to floor	Must not fire until trigger is pulled.
	Safe, Push on (to rear) & push on rear of firing pin head while pulling trigger.	Must not fire - notches not click
	Push Safe off with thumb	Should snap forward to stop-no bind.
	Push Safe on.	No bind.
	Snap Safety off fast with thumb	Must not fire until trigger is pulled.
	Trigger pull Min.- 4# Max - 5#	No creep or bind as per sample
	Depress bolt stop release in front of trigger	Remove bolt - no bind.
	Release firing pin by turning bolt plug	Check point of firing pin - no mars

COMPILED BY: S. H. Guest

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: Final Assembly

8

PART No.

First Inspection

Component	Check	Key Points
	Firing Pin Protusion	To step limits 0.045 - 0.075
Reassemble	Cock firing pin	By retracting firing pin Head with special tool
	Insert bolt in rear of receiver	Push by bolt stop with no bind.
	Pull back bolt to test	Bolt stop should hold.
Stamp	First Inspection Mark	In bolt handle slot of stock.
	To Gallery for Target & Test	

COMPILED BY: L. H. Faust

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY | PART No.: FINAL ASSEMBLY

OPERATION: TARGET & TEST | OPER. No.: 11

OBSOLETE MAR 24 1967

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Proof Test		1. Visual for first inspection mark. 2. Fire one proof cartridge - check for cracks, distortion, etc. 3. Stamp proof mark on barrel - on rear right side of barrel. see sketch		
Align Sights & Target Gun		1. Check for proof mark. 2. Load four cartridges & run through action without firing - check for ~~feeding~~, extraction, ejection and ~~marking case or bullet~~ load 4 cart, unload one in chamber 3. ~~Reload~~ and fire to align sights at 100 yd & recheck as for step 2 above. check tightness of sight		
Accuracy Test	720	1. Fire (5) shots at 100 yds - all shots must fall in 3" circle. 2. ~~Repeat above if first test fails - 100% of 10 shots in 4" circle - 80% in 3" circle.~~ 3. ~~If second test fails return for repair.~~ 4. Stamp target and test mark on right hand side of barrel. see sketch		

TO LIVE AMMUNITION INSPECTOR

COMPILED BY: S. H. Quist. | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC. REVISED AUG

R-11

PART: Final assembly | PART No.

OPERATION: Target and Test | OPER. No.: 11

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Proof Test		1. Visual for 1st inspection mark 2. Fire one proof cartridge check for cracks distortion etc. 3. Stamp proof mark on barrel (see sketch)		
Align sights and target gun.		1. Check for proof mark 2. Place muzzle through jet 3 Load 4 cartridges in magazine and one in chamber. and fire to align sights. check for feeding, extraction ejection 4. Check tightness of sights 5. Fire 5 shots at 100 yards. all shots within 3" circle. 6. Stamp target and test mark (see sketch)		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: TARGET & TEST	OPER. No.: 11

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Proof Test		1. Visual for first inspection mark. 2. Fire one proof cartridge - check for cracks, distortion, etc. 3. Stamp proof mark on barrel - on rear right side of barrel.		
Align Sights & Target Gun		1. Check for proof mark. 2. Load four cartridges & run through action without firing - check feed feeding, extraction, ejection and marki marking case or bullet. 3. Reload and fire to align sights at 100 yd & recheck as for step 2 above.		
Accuracy Test		1. Fire (5) shot at 100 yds - all shots must fall in 3" circle. 2. Repeat above if first test fails - 100% of 10 shots in 4" circle - 80% in 3" circle. 3. If second test fails return for repair. 4. Stamp target and test mark on right hand side of barrel. TO LIVE AMMUNITION INSPECTOR		

COMPILED BY: S. H. Quist.	APPROVAL & DATE: [illegible] 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

Form 11

PART NAME AND ASSEMBLY Stripped

OBSOLETE

PART No. FINAL ASSEMBLY

OPERATION: CHECK FOR LIVE AMMUNITION in Gallery

OPER. No.: 12

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
Type	No.		Max	Min.
	Visual	Check for Live Ammunition in Chamber, Magazine and Receiver. Follower must be visible.		

COMPILED BY:

APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

REVISED AUG 2 6 1948

OBSOLETE MAR 24 1967

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Assembly	Visual	1. Check for live ammunition chamber, magazine, and receiver empty, follower visible. 2. Check stamps: a. Assembly - On barrel left side rear. b. First inspection - In bolt handle slot of stock c. Proof - (REP) On rear right side of barrel d. Target & test - On rear right side of barrel. 3. Tag - must match with gun.		—
Stock	Visual	1. Finish - no check, mars and only slight scratches 2. Stock screws tight in stock, mars and burrs slight and no bad projections. 3. Barrel must seat and return to same position when pulled away and moved from side to side.		
Barrel	Visual	1. Finish a. Color uniform b. No serious mars or scratches. c. No jams at muzzle crown. d. Accept 1/16" light ring around bore.		
Sights (Front & Rear)	Visual	1. Finish a. Color uniform b. No serious mars or scratches 2. Check both sights for tightness in dovetail with		

COMPILED BY: S. H. Quist | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC. REVISED AUG 25 1966

OBSOLETE MAR 24 1947

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No	USE	LIMITS MAX.	LIMITS MIN
Cont. Sights (Front & Rear)	Visual	2. cont. Check for misalignment and square of center light blow of copper hammer - if sight moves repair and re-target.		
		3. Both sights must be aligned and square with butt.		
Function .30-06	C-52093V	1. Max. heading plug - insert in chamber, close action - bolt should not lock and safe should not go on.		
.300 Sav.	C-52095V			
.300 Mag.	C-52097V			
.257 Rob't.	C-52093V			
.270 Win	C-52094V			
		2. Operate bolt (3) times and fire - no bind, bolt handle raises and lowers easily.		
		3. Open and close bolt forcibly (3) times - trigger must not follow down.		
		4. Push "On" safe - no bind.		
		5. Push safe off with thumb - no bind, must not fire until trigger is pulled.		
Scale		6. Trigger pull - no perceptible creep or bind trigger must retract after firing.	6#	4#
Function Test	Visual	7. Wire brush and wipe bore - check for rust or other defects. Remove bolt		
Assembly		1. Insert bolt - no bind by bolt stop		
		2. Pull back bolt - bolt stop must stop bolt.		
Stamp		1. Final inspection mark on left side rear of barrel.		

COMPILED BY: S. H. Quist | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC. REVISED AUG 26 1946

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

U.S. QUIET MAR 24 1947

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX	LIMITS MIN
Stamp (Cont.)		1. Date code mark on left side rear of barrel. 2. Barrel inspection mark 3. Sign tag		
	Send to	Warehouse		

COMPILED BY S. H. Quist

APPROVAL & DATE

REMINGTON ARMS COMPANY, INC., [illegible] REVISED AUG 26 1946

TYPE 11

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: CHECK FOR LIVE AMMUNITION	OPER. No.: 12

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
Type	No.		Max.	Min.
	Visual	Check for Live Ammunition in Chamber, Magazine and Receiver. Follower must be visible.		

COMPILED BY:	APPROVAL & DATE: WVK 6/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: Final Assembly | PART No.

OBSOLETE Final Inspection | OPER. No.: 13

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1.			Check for live ammunition — chamber, magazine empty - follow each visible.		
2.	Outside appearance				
	a. Barrel		1 Finish a. Color uniform b. no serious mars or scratches c. no gains at muzzle crown. d. accept 1/16" light ring around bore		
	b. Sights		1 Finish a Check for mutilation b. Excessive off center.		
	c Stock		1. Finish no checks, mars only slight scratches 2 Check screws tight ... stock, mars & burrs slight, no bad projections		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

PART: Rifled Final Assembly | PART No.

OPERATION: Final Inspection | OPER. No.: 13

MAR 2[illegible]

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
2, Function 30-06	C-52093	1. Mag Heading Plug Insert in chamber, close bolt, Bolt must not lock. Safe must not go on.		
300 Sav	C-52095			
300 Mag	C-52097			
270 Win	C-52093			
257 Rbt	C-52094			
		2 Operate bolt 3 times and fire - no bind bolt handle rises and turns easily.		
		3 Open and close bolt forcibly 3 times. Trigger must not follow down		
		4 Push safe on - no bind pull trigger - must not fire - release safe - must not fire until trigger is pulled.		
Scale		5 Trigger pull - no perceptible creep or bind. trigger must reset after firing.	6#	4#
		6 Remove bolt.		

COMPILED BY: | APPROVAL & DATE: [illegible]

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-11

OBSOLETE

PART: Final assembly	PART No.
OPERATION: Final Inspection	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
		7. Wire brush and wipe bore, check for rust and other defects.		
		8. Insert bolt - no bind		
		9. Pull back bolt - bolt stop must hold.		
4 Check Tags & Stamps		1 check for proofmarks (REP)		
		2 check for Target & test marks.		
		3 check Tag - must match gun.		
5 Final Marks		1. Date code marks (see sketch)		
		2. Final inspection mark (see sketch)		
		3. Sign tag		
		Send to Warehouse.		

COMPILED BY:

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPS-41

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Assembly	Visual	1. Check for live ammunition chamber, magazine, and receiver empty, follower visible. 2. Check stamps: a. Assembly - On barrel left side rear. b. First inspection - In bolt handle slot of stock c. Proof - (REP) On rear right side of barrel d. Target & test - On rear right side of barrel. 3. Tag - must match with gun.		
Stock	Visual	1. Finish - no check, mars and only slight scratches 2. Set screws tight in stock, mars and burrs slight and no bad projections. 3. Barrel must seat and return to same position when pulled away and moved from side to side.		
Barrel	Visual	1. Finish a. Color uniform b. No serious mars or scratches. c. No jams at muzzle crown. d. Accept 1/16" light ring around bore.		
Sights (Front & Rear)	Visual	1. Finish a. Color uniform b. No serious mars or scratches 2. Check both sights for tightness in dovetail with		

COMPILED BY: S. H. Quist	APPROVAL & DATE: WHS 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PART: FINAL ASSEMBLY | PART No.

OPERATION: FINAL INSPECTION | OPER. NO.: 13

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1.			Check for live ammunition ⊖ chamber, magazine empty, follower invisible..		
2.	Outer appearance a. Barrel		1. Finish (a) Color uniform (b) No serious mars or scratches (c) No jams at muzzle crown (d) Accept 1/16" light ring around bore		
	b. Sights		1. Finish (a) Check for mutilation (b) Excessive off center		
	c. Stock		1. Finish - no checks mars, only slight scratches. 2. Check screws tight in Stock mars and burrs slight, no bad projections.		
3.	Function 30-06 300 Sav. 300 Mag. 270 Win. 257 Rob't	 C-52093V C-52095V C-52097V C-52093V C-52094V	1. Max. Heading Plug Insert in Chamber, close Bolt Bolt must not lock., Safe must not go on. *Remove Heading Plug* 2. Operate Bolt 3 times and fire no bind, Bolt Handle raise and lowers easily. 3. Open and close Bolt forcibly 3 times. Trigger must not follow down. 4. Push safe on - no bind - pull trigger - must not fire - release safe - must not fire until trigger is pulled Bolt Handle must not lift or Safe.		
	Scale		5. Trigger pull - no preceptible creep or bind. ~~Trigger must retract after firing~~	6#	4#
			6. Remove Bolt & check No against Rec. & gun tag 7. Wire brush and wipe bore, check for rust and other defects.		

COMPILED BY: | APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPS-11

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
Cont. Sights (Front & Rear)	Visual	2. cont. light blow of copper hammer - if sight moves repair and re-target.		
		3. Both sights must be aligned and square with butt.		
Function .30-06 .300 Sav. .300 Mag. .257 Rob't. .270 Win	C-52093V C-52095V C-52097V C-52093V C-52094V	1. Max. heading plug - insert in chamber, close action - bolt should not lock and safe should not go on. Accept if very snug.		
		2. Operate bolt (3) times and fire - no bind, bolt handle raises and lowers easily.		
		3. Open and close bolt forcibly (3) times - trigger must not follow down.		
		4. Push "On" safe - no bind.		
		5. Push safe off with thumb - no bind, must not fire until trigger is pulled.		
Scale		6. Trigger pull - no perceptible creep or bind trigger must retract after firing.	5#	4#
Function	Visual	7. Wire brush and wipe bore - check for rust or other defects.		
Assembly		1. Insert bolt - no bind by bolt stop		
		2. Pull back bolt to test - bolt stop must stop bolt.		
Stamp		1. Final inspection mark on left side rear of barrel.		

COMPILED BY: S. H. Quist | APPROVAL & DATE: MHL 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY

OPERATION: FINAL INSPECTION

OPER. No.: 13

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
			8. Insert Bolt - no bind. 9. Pull back Bolt - Bolt Stop must hold.		
4.	Check tags and Stamps		1. Check for Proofmark (REP) 2. Check for Target and Test mark. 3. Check Tags - must match gun		
5.	Final Marks		1. Date code mark (see sketch) 2. Final inspection mark (see Sketch) 3. Sign Tags		
			SEND TO WAREHOUSE		

COMPILED BY:

APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. N. SULLIVAN, INC.

PART: FINAL ASSEMBLY	PART No. Final Assembly
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

GAUGES		USE	LIMITS	
TYPE	No.		MAX.	MIN.
Stamp (Cont.)		2. Date code mark on left side rear of barrel.		
		3. Sign tag		
		Send to Warehouse		

COMPILED BY: S. H. Quist | APPROVAL & DATE: mtl 8/30/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TPR-11

PART: FINAL ASSEMBLY	PART No.
OPERATION: FINAL INSPECTION	OPER. No.: 13

PROCESS RECORD — INSPECTION

	GAUGES TYPE	GAUGES No.	USE	LIMITS MAX.	LIMITS MIN.
1.			Check for live ammunition @ chamber, magazine empty, follower invisible.		
2	Outer appearance				
	a. Barrel		1. Finish (a) Color uniform (b) No serious mars or scratches (c) No jams at muzzle crown (d) Accept 1/16" light ring around bore		
	b. Sights		1. Finish (a) Check for mutilation (b) Excessive off center		
	c. Stock		1. Finish - no checks mars, only slight scratches. 2. Check screws tight in Stock mars and burrs slight, no bad projections.		
3.	Function 30-06 300 Sav. 300 Mag. 270 Win. 257 Rob't	 C-52093V C-52095V C-52097V C-52093V C-52094V	1. Max. Heading Plug Insert in Chamber, close Bolt Bolt must not lock. Safe must not go on. Remove Heading Plug. 2. Operate Bolt 3 times and fire no bind, Bolt Handle raise and lowers easily. 3. Open and close Bolt forcibly 3 times. Trigger must not follow down. 4. Push safe on - no bind - pull trigger - must not fire - release safe - must not fire until trigger is pulled Bolt Handle must not lift on Safe. 5. Trigger pull - no preceptible creep or bind. Trigger must retract after firing 6. Remove Bolt & Check No. against Receiver & Gun Tag 7. Wire brush and wipe bore, check for rust and other defects.		
	Scale			6#	4#

OBSOLETE (ED 15 1947)

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

N. H. SULLIVAN, INC.

PR-20

PART: FINAL ASSEMBLY

PART No. ~~FINAL ASSEMBLY~~

OPERATION: ~~ASSEMBLY OF BOLT~~ Ream Ejector Hole, Assemble Extractor, Ejector Spring and Ejector Pin

OPER. No.: 14

PROCESS RECORD - ASSEMBLY

STEP	TOOLS & GAGES TYPE	NO.	REMARKS
1. Ream Ejector Hole			
2. Insert Extractor 17020-W (all calibers except .300 mag) (17020 V – 300 Hi Mag)			Claw must be opposite Ejector Hole
3. Insert Ejector Sprg. 17019 and Ejector 17017	Fixture	C51730	
4. Insert Ejector Pin 17018	Fixture	C51730	
~~4. Screw Firing Pin Assembly 17223YW, YV into Bolt Body Assembly 17005W, V~~ ~~Remove V Clamp~~	Position 01		

Retypes 1 OBSOLETE APR 22 1941

COMPILED BY: MVP

APPROVAL & DATE: [illegible]

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

TPR-20

PART: FINAL ASSEMBLY	PART No. ~~FINAL ASSEMBLY~~
OPERATION: ASSEMBLE SIGHTS & Receiver Plug Screws	OPER. No. ~~1~~ 16

PROCESS RECORD - ASSEMBLY

STEP	TOOLS *	REMARKS
1. Insert Front Sight, 17026, ~~center on~~ Ramp	Vise Jaws C-53325	Must be tight in Dovetail
2. Insert Rear Open Sight Assembly, 17030-Y, and Open Sight Step, 17033-W	Vise Jaws C-53325	Must be tight in Dovetail
3. Insert (4) Receiver Plug Screws. 17034		

* Use normal complement of Hand tools to Assemble as required.

Retyped OBSOLETE APR 22 1941

COMPILED BY: MHL	APPROVAL & DATE: ~~MHL 6/10/41~~

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PR-20

PART: FINAL ASSEMBLY	PART No.: FINAL ASSEMBLY
OPERATION: ASSEMBLE Firing Pin assembly into bolt / TRIGGER ASSEMBLY, BOLT STOP & RECEIVER	OPER. No.: 18

Retyped DE VOLETIE APR 22 1941

PROCESS RECORD - ASSEMBLY

STEP	TOOLS*	REMARKS
1. Screw Firing Pin assembly (17223 YW-721 (17223 YV) 722 into Bolt Assembly (17005 YW 721 except .300 mag) (17005 YV-721-300 Mag) (17005 YU-722)		
2. Insert Trigger Assembly, 17036-Y.		
3. Start Bolt Stop Pin, 17037-W, and Sear Pin, 17037-V, from Right Side.		
4. Insert Bolt Stop Spring, 17014, and Bolt Stop, 17013.		
5. Drive out Dummy Pins with Bolt Stop Pin and Sear Pin.		
6. Insert Bolt and push safety on.		There must be clearance between Sear and Trigger.
7 Try Safety and Bolt Action and adjust if necessary		
8. Check & set trigger pull 4 lb to 6 lb		

* Use normal complement of Hand Tools to Assemble as Required.

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

TPR-20

PART: Final Assembly	PART No.
OPERATION: Action Inspection	OPER. No.: 19

RECEIVED APR 24 1947 ETF

1. With action in fired position, cock bolt handle while pressing forward firmly. Immediately close handle. Bolt must stay locked.

2. Raise bolt handle. Observe sear and trigger connector through right side inspection hole. Must be definite clearance between sear and trigger connector.

3 Close bolt. While moving safety to safe position firing pin head must move slightly to rear.

4. Observe sear through inspection hole on left side. When safety is moved to safe position sear must raise slightly.

5 Remove bolt. Press upward on rear end of sear and safety cam. There should be no upward movement. Replace bolt.

6. Check all screws in housing. Should be snug fit.

COMPILED BY:	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PR-20

PART: Final Assembly.	PART NO.
OPERATION: Assembly of stock to action etc.	OPER. No.: 20

COMPLETE APR 22 1941

1. Tighten (1) Butt Plate Screws

2. assemble and fit Stock (17035 W-721) (17035 V-722) to Barrel assembly (17000 ~~W-30-06-V-270 Win-V-U .300 H&H mag~~) 721, (17000 VS .257 Rob. VT .300 Sav) 722,

3. assemble magazine (17027-721) (17057-722)

4. assemble Trigger Guard (17054W-721) (17054V 722) and Trigger Guide Plate 17055.

5. Insert Front Guard Screw (17025-W-721) (17025-V 722) and Rear Guard Screw 17025-V and Center Guard Screw 17580.

6. Check Safety for Bind on ~~Fit~~ stock and fit if necessary.

Use normal complement of hand tools to complete assembly

COMPILED BY: WHP	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PART: FINAL ASSEMBLY	PART No. FINAL ASSEMBLY
OPERATION: FINAL ASSEMBLY	OPER. No.: 20

PROCESS RECORD - ASSEMBLY

STEP	TOOLS*	REMARKS
1. Check and set Trigger Pull at 4 to 6 lbs.		
2. Position Stock 17035-W Bottom up		Check that Barrel Bracket Lug contacts back of Recoil Shoulder in Stock
3. Insert Magazine & Follower Assembly, 17115.	01 22	
4. Insert Trigger Guard, 17054-W and Trigger Guide Plate, 17055.		
5. Insert Front Guard Screw, 17025-W and Rear Guard Screw, 17025-V, Center Guard Screw 17580 check safety		
6. Insert Receiver Plug Screws (4), 17034.		
7. Tighten Butt Plate Screws.		

* Use normal complement of Hand tools to Assemble as Required.

COMPILED BY: mfd	APPROVAL & DATE: mfd 8/20/46

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

20

PART: Final Assembly	PART No.
OPERATION: Install Follower and check function.	OPER. No.: 22

APR 22 1941

1. Assemble Follower assembly 17115-Y 7210r 17116Y 722 in magazine.

2. Try dummy shells ~~in magazine~~ for feeding and ejection and adjust if necessary.

3 Check Trigger Pull 4# to 6# and adjust if necessary.

COMPILED BY: WPS	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

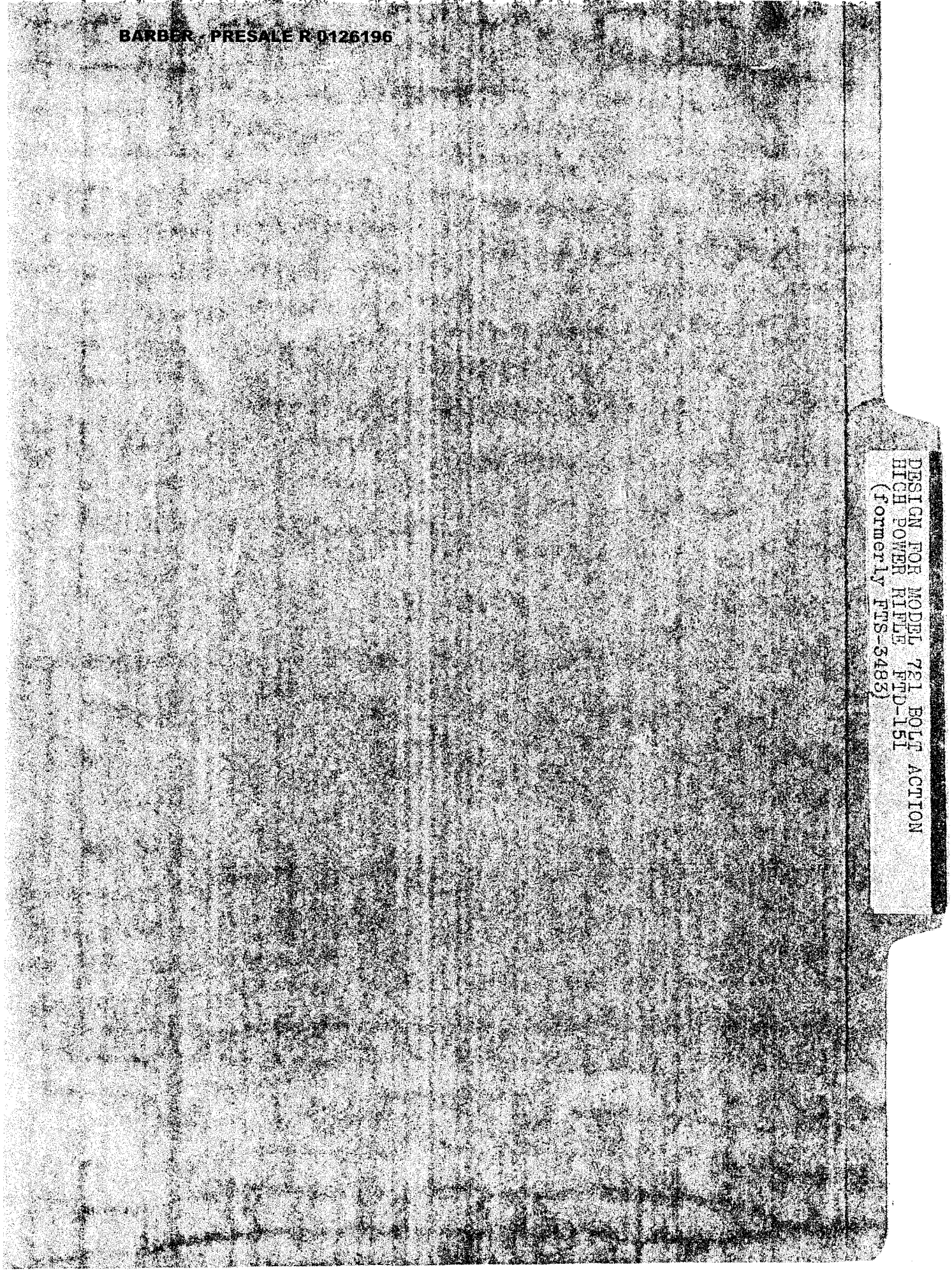
PART: Final Assembly.	PART No.
OPERATION: Check for Live Ammunition	OPER. No.: 32.

Check gun for Live Ammunition before leaving gallery. Chamber must be empty and Follower visible.

COMPILED BY: WVP	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON


DESIGN FOR MODEL 721 BOLT ACTION
HIGH POWER RIFLE FTD-151
(formerly FTS-3483)

BARBER - PRESALE R 0126197

J.O. Clifford R.H. Grace
H.A. Brown R.M. Smith
S.M. Alvis W. Holloway
P.B.Rutherford H.J.Hackman
J. Hammond V. DeReus

Project No. FD-721 (Part I - 5 Cals.)

Project Title BOLT ACTION HIGH POWER RIFLE

FINANCIAL STATUS AS OF September 27, 1948

	Total Estimate	Allocation of Auth. Funds	Spent This Week	Total Expended	Balance Unexpended
FD-721-1 - DEVELOPMENT					
Design					
Investigation	$ 556.00	$ 556.00	$ .00	$ 556.20	$ (.20)
Design	15,008.00	15,008.00	184.21	12,564.21	443.79
Design Revisions	20,737.00	20,737.00	- 4.35	17,080.66	3,656.34
Model Making	15,892.00	15,892.00	.00	15,592.10	299.90
Sub-Total - -	$ 48,173.00	$ 48,173.00	$ 188.66	$ 45,773.26	$ 4,399.74
Specifications					
Testing Guns	$ 11,685.00	$ 11,685.00	$ .00	$ 7,948.42	$ 3,736.58
Specifications	7,285.00	7,285.00	1.24	9,551.57	(2,270.57)
Sub-Total - -	$ 18,970.00	$ 18,970.00	$ 1.24	$ 16,509.99	$ 2,460.07
Product Engineering					
Process Engineering	$ 61,957.00	$ 61,957.00	$ 797.92	$ 52,201.00	$ 9,756.00
Trial Run	16,516.00	16,516.00	171.58	237.68	16,278.32
Sub-Total - -	$ 78,455.00	$ 78,455.00	$ 969.24	$ 52,438.68	$ 26,014.32
Tool Design					
Tool Design	$ 78,017.00	$ 78,017.00	$ 147.88	$ 80,867.75	$ (2,850.75)
Tool Design Revisions	12,500.00	12,500.00	437.61	8,422.84	4,077.16
Tool Revisions	15,000.00	15,000.00	.00	.00	15,000.00
Sub-Total - -	$105,517.00	$105,517.00	$ 585.17	$ 88,290.59	$ 16,526.41
Administration					
Engineering Files	$ 5,700.00	$ 5,700.00	$ 17.14	$ 3,559.88	$ 2,140.12
Project Engineering	10,250.00	10,250.00	183.25	183.25	10,066.75
Sub-Total - -	$ 15,950.00	$ 15,950.00	$ 200.39	$ 3,523.13	$ 12,426.87
TOTAL - - - -	$267,065.00	$267,065.00	$1,914.60	$205,287.59	$ 65,827.41
FD-721-2 - TOOLING	$178,309.00	$178,309.00	$	$	$178,309.00
FD-721-3 - SPEC.MACH.& EQUIP.	$ .00	$ .00	$	$	$ .00
FD-721-4 - STAND.MACH.& EQUIP.	$574,527.00	$574,527.00	$	$	$574,527.00
FD-721-5 - PRODUCTION AIDS	$ 24,819.00	$ 24,819.00	$	$	$ 24,819.00
FD-721-6 - PILOT OPERATIONS					
Quality Audit	$ 6,366.00	$ 6,366.00	$ 251.54	$ 251.54	$ 6,114.46
Methods Engineering	1,650.00	1,650.00	.00	.00	1,650.00
Machine Changes & Add.	4,114.00	4,114.00	115.12	115.12	3,998.88
Machine Rearrangement	2,690.00	2,690.00	19.87	19.87	2,670.13
Pilot Lot Manufacture	38,715.00	38,715.00	1,385.96	29,566.10	9,148.90
Tool Replacement	5,528.00	5,528.00	4.97	4.97	5,523.03
Credit for O.K. Guns	(4,410.00)	(4,410.00)			(4,410.00)
Sub-Total - -	$ 52,653.00	$ 52,653.00	$1,776.46	$ 29,957.40	$ 22,715.60
GRAND TOTAL - - - -	$897,575.00	$897,575.00	$3,884.86	$253,174.79	$644,196.21

FD-721-1 & 721-6 - Subject to Distribution Adjustment

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126197
R2527185

CC: S. M. Alvis
H. A. Brown
R. H. Grace
J. Hammond
R. A. A. Hentschel
P. B. Rutherford
M. H. Smith

REC. R.A.A.H. APR 15 1946

PROGRESS REPORT

Barrel Steel - Physical Property Test

Period: November 5, 1945 to April 10, 1946
Project: FTD-151 P.O. 70068
Amount Authorized: $750.00 Amount Spent: $712.66
Previous Progress Reports - None
Prepared by: C. F. Benner

Introduction

Information concerning barrel strength properties are of an emperical nature and it was felt that these values should be proven to be practical, or that values be determined by the test for use as a practical basis for designing rifle barrels.

Objective

To determine physical properties at which rifle barrels will fail under proof firing and conversely to determine physical properties of a rifle barrel of a safe minimum cross section that will withstand proof firing and pass safety tests for firing under abnormal conditions (plugged bore).

Work Program

1. Chemical analysis of blanks
2. Magnetic analysis of blanks
3. Jominy hardenability of blanks
4. Heat treatment to physical properties as follows

	Yield p.s.i.	No. Blanks	Calibers To Be Tested
a.	70,000	9	.300 Mag. M-721 & 760 .270 M-760
b.	80,000	9	.300 Mag. M-721 & 760, .270 M-760
c.	90,000	6	.300 Mag. M-760, .270 M-760
d.	100,000	3	.300 Mag. M-760

5. Turn blanks over to Design for manufacture.

Conclusions

Conclusions to be drawn on completion of firing test.

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Future Program

Future Program as seen at this time will only concern the completion of the testing program which has been interrupted because of the more urgent requirements of the M/721.

Patent Situation

Not involved in this study.

Experimental Details

1. Chemical Analysis of Blanks
   Group I - 1-5/16" dia. blanks
   C-.37, Mn-.78, Cr-.14, Mo-0

   Group II- 1-3/8" dia. blanks
   C-.37, Mn-.93, Cr-.90, Mo-.16

2. Jominy Hardenability Test
   Group I - 1-5/16" dia. blanks - Rc48 at 3/8"
   Rc33½ at ¾"

   Group II- 1-3/8" dia. blanks - Rc53 at 3/8"
   Rc42½ at ¾"

3. Heat Treatment - 100000 p.s.i. - yield - 1-3/8" dia. blanks
   a. Heat to 1550°F - Hold 2 hrs. at heat
   Oil Quench - 3 min. max. in oil
   Temper 1225°F - 2 hrs.
   Brinell Hardness 255-255-255
   b. Physical Properties
   Yield (p.s.i.) 101,500
   Tensile (p.s.i.) 121,750
   Elongation - 21½"
   Reduction in Area - 66%

4. Heat Treatment - 90,000 p.s.i. yield - 1-3/8" dia. blanks.
   a. Heat to 1550°F - Hold 2 hrs. at heat
   Oil Quench - 3 min. max. in oil
   Temper at 1260°F - 2 hrs.
   Brinell Hardness 223-235-235-241-241
   b. Physical Properties - Blank having 223 Brinell used.
   Yield (p.s.i.) - 85,000
   Tensile (p.s.i.) - 106,000
   Elongation - 23%
   Reduction in Area - 67%
   Blank having 241 Brinell hardness
   Yield (p.s.i.) - 94,800
   Tensile (p.s.i.) - 113,000
   Elongation - 24%
   Reduction in Area - 66%

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5. Heat Treatment - 80,000 p.s.i. yield - 1-5/16" dia. blanks
   a. Heat to 1550°F - Hold 2 hrs. at heat
      Oil Quench - 3 min. max. in oil
      Temper at 1350°F - 2 hrs.
      Brinell Hardness - 207(7) - 217-202
   b. Physical Properties - Blank having 207 Brinell hardness
      Yield (p.s.i.) - 80,700
      Tensile (p.s.i.) 99,750
      Elongation - 26½%
      Reduction in Area - 68%

6. Heat Treatment - 70,000 p.s.i. yield
   Cold rolled stock will be used to obtain barrels having this yield.

7. All barrel blanks have been marked for identification as follows and stored for future use:

   #1 through #6 incl. - 85,000 - 94,000
   #7 through #9 incl. -100,000
   #10 through #19 incl. - 80,000

. O. Clifford
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R.M. Smith
W. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

FINANCIAL STATUS AS OF June 14, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	14,979.86	1,020.14
Sub-Total - -	$ 42,582.00	$ 41,561.86	$ 1,020.14
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,572.28	$ 627.72
Specifications	4,000.00	7,255.99	(3,255.99)
Engineering Files	2,818.00	1,478.83	1,339.17
Sub-Total - -	$ 16,018.00	$ 17,307.10	$ (1,289.10)
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,631.81	$ (131.81)
Processing	26,000.00	33,413.52	(7,413.52)
Trial Run	7,500.00	66.36	7,433.64
Sub-Total - -	$ 37,000.00	$ 37,111.69	$ (111.69)
TOOL DESIGN - -			
Design	$ 41,000.00	$ 75,071.09	$(34,071.09)
Process Sketching	4,000.00	1,609.88	2,390.12
Tool Revisions	12,500.00	1,912.50	10,587.50
Sub-Total - -	$ 57,500.00	$ 78,593.47	$(21,093.47)
MISCELLANEOUS			
Consumer- Accept. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	14,605.63	4,894.37
Sub-Total - -	$ 21,000.00	$ 14,639.07	$ 6,360.93
GRAND TOTAL - -	$174,100.00	$189,213.19	$(15,113.19)

EXPENDITURES For Week Ending	6/14/46
Design	$ 177.47
Specifications	70.81
Process Eng.	595.24
Tool Design	1,935.31
Miscellaneous	1,553.92
TOTAL - -	$ 4,332.75

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

O. Clifford
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Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

FINANCIAL STATUS AS OF May 3, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,813.16	2,186.84
Sub-Total - -	$ 42,582.00	$ 40,395.16	$ 2,186.84
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,504.52	$ 695.48
Specifications	4,000.00	6,951.87	(2,951.88) *
Engineering Files	2,818.00	1,212.42	1,605.58
Sub-Total - -	$ 16,018.00	$ 16,668.81	$ (650.82)
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,131.81	$ 368.19
Processing	26,000.00	30,229.50	(4,229.50)
Trial Run	7,500.00	9.98	7,490.02
Sub-Total - -	$ 37,000.00	$ 33,371.29	$ 3,628.71
TOOL DESIGN - -			
Design	$ 41,000.00	$ 58,208.43	$(17,208.43)
Process Sketching	4,000.00	1,420.02	2,579.98
Tool Revisions	12,500.00	900.29	11,599.71
Sub-Total - -	$ 57,500.00	$ 60,528.74	$(3,028.74)
MISCELLANEOUS - -			
Consumer - Accept.Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	9,018.45	10,481.55
Sub-Total - -	$ 21,000.00	$ 9,051.89	$11,948.11
GRAND TOTAL - -	$174,100.00	$160,015.89	$14,084.11

EXPENDITURES For Week Ending 5/3/46

Design	$ 171.21
Specifications	1,897.88
Process Eng.	3,217.01
Tool Design	5,021.96
Miscellaneous	1,022.95
TOTAL - - -	$ 11,331.01

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

. O. Clifford
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. Hammond
. H. Grace
. M. Smith
. Holloway

Project No. ETD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

REC. R.A.A.H. MAY 2 1946

FINANCIAL STATUS AS OF April 26, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	BALANCE UNEXPENDED
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,641.95	2,358.05
Sub-Total - -	$ 42,582.00	$ 40,223.95	$ 2,358.05
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,504.52	$ 695.48
Specifications	4,000.00	5,328.87	(1,328.87)
Engineering Files	2,818.00	937.54	1,880.46
Sub-Total - -	$ 16,018.00	$ 14,770.93	$ 1,247.07
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,131.81	$ 368.19
Processing	26,000.00	27,012.49	(1,012.49)
Trial Run	7,500.00	9.98	7,490.02
Sub-Total - -	$ 37,000.00	$ 30,154.28	$ 6,845.72
TOOL DESIGN - -			
Design	$ 41,000.00	$ 53,348.49	$(12,348.49)
Process Sketching	4,000.00	1,420.02	2,579.98
Tool Revisions	12,500.00	738.27	11,761.73
Sub-Total - -	$ 57,500.00	$ 55,506.78	$ 1,993.22
MISCELLANEOUS - -			
Consumer - Accept.Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	7,995.50	11,504.50
Sub-Total - -	$ 21,000.00	$ 8,028.94	$12,971.06
GRAND TOTAL	$174,100.00	$148,684.88	$25,415.12

EXPENDITURES For Week Ending 4/26/46

Design	$ 101.55
Specifications	331.19
Process Engineering	326.68
Tool Design	2,476.40
Miscellaneous	1,063.90
TOTAL - - -	$4,299.72

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

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Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

C.R.A.A.H. APR 24 1946

FINANCIAL STATUS AS OF April 19, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,540.40	2,459.60
Sub-Total - -	$ 42,582.00	$ 40,122.40	$ 2,459.60
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,502.45	$ 697.55
Specifications	4,000.00	5,050.41	* (1,050.41)
Engineering Files	2,818.00	886.88	1,931.12
Sub-Total - -	$ 16,018.00	$ 14,439.74	$ 1,578.26
PROCESS ENGINEERING --			
Process Development	$ 3,500.00	$ 3,131.81	$ 368.19
Processing	26,000.00	26,695.79	* (695.79)
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 29,827.60	$ 7,172.40
TOOL DESIGN - -			
Design	$ 41,000.00	$ 51,036.07	* $(10,036.07)
Process Sketching	4,000.00	1,420.02	2,579.98
Tool Revisions	12,500.00	574.29	11,925.71
Sub-Total - -	$ 57,500.00	$ 53,030.38	$ 4,469.62
MISCELLANEOUS - -			
Consumer - Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	6,931.60	12,568.40
Die Casting			
Sub-Total - -	$ 21,000.00	$ 6,965.04	$14,034.96
GRAND TOTAL	$174,100.00	$144,385.16	$29,714.84

EXPENDITURES For Week Ending 4/19/46

Design	$ 32.90
Specifications	503.09
Process Engineering	202.70
Tool Design	1,979.42
Miscellaneous	989.14
TOTAL	$3,707.25

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

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W. Holloway

Project No. FTD-151
Project Title Bolt Action High Power Rifle
Model M/721 & 722

REC. R.A.A.H APR 18 1946

FINANCIAL STATUS AS OF April 12, 1946

	ALLOCATION OF AUTH. FUNDS	TOTAL AMOUNT EXPENDED	BALANCE UNEXPENDED
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,507.50	2,492.50
Sub-Total - -	$ 42,582.00	$ 40,089.50	$ 2,492.50
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,500.18	$ 699.82
Specifications	4,000.00	4,606.77	(606.77)
Engineering Files	2,818.00	829.70	1,988.30
Sub-Total - -	$ 16,018.00	$ 13,936.65	$ 2,081.35
PROCESS ENGINEERING --			
Process Development	$ 3,500.00	$ 3,131.81	$ 368.19
Processing	26,000.00	26,493.09	(493.09)
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 29,624.90	$ 7,375.10
TOOL DESIGN - -			
Design	$ 41,000.00	$ 49,311.61	$(8,311.61)
Process Sketching	4,000.00	1,416.36	2,583.64
Tool Revisions	12,500.00	322.99	12,177.01
Sub-Total - -	$ 57,500.00	$ 51,050.96	$ 6,449.04
MISCELLANEOUS - -			
Consumer - Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	5,942.46	13,557.54
Contingencies	.00	.00	.00
Sub-Total - -	$ 21,000.00	$ 5,975.90	$15,024.10
GRAND TOTAL	$174,100.00	$140,677.91	$33,422.09

EXPENDITURES For Week Ending 4/12/46

Design	$ 7.99
Specifications	519.18
Process Engineering	282.75
Tool Design	6,814.85
Miscellaneous	805.43
TOTAL	$8,430.20

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REC. R.A.A.H.
APR 11 1946

O. Clifford
A. Brown
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Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

FINANCIAL STATUS AS OF April 5, 1946

	ALLOCATION OF AUTH. FUNDS	TOTAL EXPENDED	BALANCE UNEXPENDED
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,499.51	2,500.49
Sub-Total - -	$ 42,582.00	$ 40,081.51	$ 2,500.49
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,489.63	$ 710.37
Specifications	4,000.00	4,181.72	(181.72)
Engineering Files	2,818.00	746.12	2,071.88
Sub-Total - -	$ 16,018.00	$ 13,417.47	$ 2,600.53
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,131.81	$ 368.19
Processing	26,000.00	26,210.34	(210.34)
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 29,342.15	$ 7,657.85
TOOL DESIGN - -			
Design	$ 41,000.00	$ 42,764.84	$(1,764.84)
Process Sketching	4,000.00	1,416.36	2,583.64
Tool Revisions	12,500.00	54.91	12,445.09
Sub-Total - -	$ 57,500.00	$ 44,236.11	$13,263.89
MISCELLANEOUS - -			
Consumer - Accept. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	5,137.03	14,362.97
Contingencies	.00	.00	.00
Sub-Total - -	$ 21,000.00	$ 5,170.47	$15,829.53
TOTAL	$174,100.00	$132,247.71	$41,852.29

EXPENDITURES For Week Ending	4/5/46
Design	$ 148.04
Specifications	654.46
Process Engineering	117.97
Tool Design	2,211.36
Miscellaneous	596.57
TOTAL	$3,728.40

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

O. Clifford
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R. M. Smith
W. Holloway

REC. R.A.A.H. APR 5 1946

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

FINANCIAL STATUS AS OF March 29, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	13,351.47	2,648.53
Sub-Total - -	$ 42,582.00	$ 39,933.47	$ 2,648.53
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,394.38	$ 805.62
Specifications	4,000.00	3,680.47	319.53
Engineering Files	2,818.00	688.16	2,129.84
Sub-Total - -	$ 16,018.00	$ 12,763.01	$ 3,254.99
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,123.87	$ 376.13
Processing	26,000.00	26,100.31	(100.31)
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 29,224.18	$ 7,775.82
TOOL DESIGN - -			
Design	$ 41,000.00	$ 40,561.30	$ 438.70
Process Sketching	4,000.00	1,412.45	2,587.55
Tool Revisions	12,500.00	51.00	12,449.00
Sub-Total - -	$ 57,500.00	$ 42,024.75	$15,475.25
MISCELLANEOUS - -			
Consumer - Accept. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	4,540.46	14,959.54
Contingencies	.00	.00	.00
Sub-Total - -	$ 21,000.00	$ 4,573.90	$16,426.10
GRAND TOTAL	$174,100.00	$128,519.31	$45,580.69

EXPENDITURES For Week Ending	3/29/46
Design	$ 246.84
Specifications	354.35
Process Engineering	231.12
* Tool Design	117.87
Miscellaneous	487.52
TOTAL - -	$1,437.70

* Actual expenditures for the week amounted to $2,814.49 against which were credited cancelled commitments in the amount of $2,696.62 leaving $117.87 net.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

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A. A. Hentschel
B. Rutherford
J. Hammond
R. H. Grace
R. M. Smith
W. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/720 & 721

REC. R.A.A.H. APR 2 1946

FINANCIAL STATUS AS OF March 22, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	15,672.00	15,672.00	.00
Design Revisions	16,000.00	15,104.63	2,895.37
Sub-Total ———	$ 42,582.00	$ 39,686.63	$ 2,895.37
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,581.13	$ 618.87
Specifications	4,000.00	3,416.73	583.27
Engineering Files	2,818.00	610.80	2,207.20
Sub-Total ———	$ 16,018.00	$ 12,408.66	$ 3,609.34
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,084.18	$ 415.82
Processing	26,000.00	25,908.88	91.12
Trial Run	7,500.00	.00	7,500.00
Sub-Total ———	$ 37,000.00	$ 28,993.06	$ 8,006.94
TOOL DESIGN - -			
Design	$ 41,000.00	$ 40,448.48	$ 551.52
Process Sketching	4,000.00	1,407.40	2,592.60
Tool Revisions	12,500.00	51.00	12,449.00
Sub-Total ———	$ 57,500.00	$ 41,906.88	$15,595.12
MISCELLANEOUS - -			
Consumer - Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	4,052.94	15,447.06
Contingencies	.00	.00	.00
Sub-Total ———	$ 21,000.00	$ 4,086.38	$16,913.62
GRAND TOTAL - - - - -	$174,100.00	$127,081.61	$47,018.39

EXPENDITURES For Week Ending 5/22/46

Design	$ 159.11
Specifications	492.05
Process Engineering	765.65
Tool Design	5,516.22
Miscellaneous	617.55
TOTAL	$7,350.36

NOTE: Total Amount Authorized and Total Estimate Are Identical.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

J. O. Clifford
G. R. McCormick
R.A.A. Hentschel
P. B. Rutherford
J. Hammond
R. H. Grace
R. M. Smith
W. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/720 & 721

FINANCIAL STATUS AS OF March 15, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	15,672.00	15,672.00	.00
Design Revisions	16,000.00	12,945.52	3,054.48
Sub-Total - -	$ 42,582.00	$ 39,527.52	$ 3,054.48
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,337.09	$ 862.91
Specifications	4,000.00	3,053.69	946.31
Engineering Files	2,818.00	525.85	2,292.17
Sub-Total - -	$ 16,018.00	$ 11,916.61	$ 4,101.39
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,074.93	$ 425.07
Processing	26,000.00	25,152.50	847.50
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 28,227.43	$ 8,772.57
TOOL DESIGN - -			
Design	$ 41,000.00	$ 35,158.44	$ 5,841.56
Process Sketching	4,000.00	1,407.40	2,592.60
Tool Revisions	12,500.00	24.82	12,475.18
Sub-Total - -	$ 57,500.00	$ 36,590.66	$20,909.34
MISCELLANEOUS - -			
Consumer-Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	3,435.59	16,064.41
Contingencies	.00	.00	.00
Sub-Total - -	$ 21,000.00	$ 3,469.03	$17,530.97
GRAND TOTAL	$174,100.00	$119,731.25	$54,368.75

EXPENDITURES For Week Ending 3/15/46

Design	$ 299.58
Specifications	348.74
Process Engineering	694.86
Tool Design	4,669.15
Miscellaneous	417.76
TOTAL	$6,429.89

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126210

R.A.A.M. MAR 19 1946

O. Clifford
R. McCormick
R.A.A. Hentschel
P. B. Rutherford
J. Hammond
R. H. Grace
R. M. Smith
W. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

FINANCIAL STATUS as of March 8, 1946

	Allocation of Auth. Funds	Total Expended	Balance Unexpended
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	12,646.14	3,353.86
Sub-Total - -	$ 42,582.00	$ 39,228.14	$ 3,353.86
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,298.79	$ 901.21
Specifications	4,000.00	2,817.82	1,182.18
Engineering Files	2,818.00	451.26	2,366.74
Sub-Total - -	$ 16,018.00	$ 11,567.87	$ 4,450.13
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,074.93	$ 425.07
Processing	26,000.00	24,457.64	1,542.36
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 37,000.00	$ 27,532.57	$ 9,467.43
TOOL DESIGN - -			
Design	$ 41,000.00	$ 30,548.19	$10,451.81
Process Sketching	4,000.00	1,373.34	2,626.66
Tool Revisions	12,500.00	.00	12,500.00
Sub-Total	$ 57,500.00	$ 31,921.53	$25,578.47
MISCELLANEOUS - -			
Consumer-Accept.Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	3,017.81	16,482.19
Contingencies	.00	.00	.00
Sub-Total	$ 21,000.00	$ 3,051.25	$17,948.75
GRAND TOTAL	$174,100.00	$113,301.36	$60,798.64

EXPENDITURES For Week Ending 3/8/46

Design	$ 385.57
Specifications	371.15
Process Engineering	401.27
Tool Design	1,553.64
Miscellaneous	542.84
TOTAL	$3,252.47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126210 R2527198

W. O. Clifford
G. R. McCormick
R. A. A. Hentschel
F. B. Rutherford
J. Hammond)
M. Smith)
R. H. Grace
R. M. Smith
W. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 & 722

REC. R.A.A.H. MAR 14 1946

FINANCIAL STATUS as of March 1, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN —			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	15,672.00	15,672.00	.00
Design Revisions	16,000.00	12,262.57	3,737.43
Sub-Total - -	$ 42,582.00	$ 38,844.57	$ 3,737.43
SPECIFICATIONS - -			
Testing	$ 9,200.00	$ 8,110.76	$ 1,089.24
Specifications	4,000.00	2,874.99	1,325.01
Engineering Files	2,818.00	410.97	2,407.03
Sub-Total - -	$ 16,018.00	$ 11,196.72	$ 4,821.28
PROCESS ENGINEERING - -			
Process Development	$ 5,500.00	$ 5,074.93	$ 425.07
Processing	26,000.00	24,056.37	1,943.63
Trial Run	7,500.00	.00	7,500.00
Sub-Total - -	$ 57,000.00	$ 27,131.30	$ 9,868.70
TOOL DESIGN - -			
Design	$ 41,000.00	$ 29,014.55	$11,985.45
Process Sketching	4,000.00	1,375.34	2,628.66
Tool Revisions	12,500.00	.00	12,500.00
Sub-Total - -	$ 57,500.00	$ 30,387.89	$27,112.11
MISCELLANEOUS - -			
Consumer-Accpt.Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	2,474.97	17,025.03
Contingencies	.00	.00	.00
Sub-Total - -	$ 21,000.00	$ 2,508.41	$18,491.59
GRAND TOTAL ——	$174,100.00	$110,068.89	$64,031.11

EXPENDITURES for Week Ending 3/1/46

Design	$ 447.96
Specifications	558.57
Process Engineering	554.12
Tool Design	2,236.87
Miscellaneous	284.64
TOTAL	$ 3,881.96

Note: The total amount authorized and total estimate are identical.

. O. [illegible]ord
. A. McCormick
.A.A. Hentschel
. B. Rutherford
. Hammond)
. Smith)
. H. Grace
. M. Smith
. Holloway

Project No. FTD-151

Project Title Bolt Action High Power Rifle

Model M/721 7 &22

FINANCIAL STATUS as of Feb. 22, 1946

REC. R.A.A.H.
MAR 6 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN - -			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	13,672.00	13,672.00	.00
Design Revisions	16,000.00	11,814.61	4,185.39
Sub-Total - - - -	$ 42,582.00	$ 38,396.61	$ 4,185.39
SPECIFICATIONS —			
Testing	$ 9,200.00	$ 8,011.56	$ 1,188.44
Specifications	4,000.00	2,638.82	1,361.18
Engineering Files	2,818.00	187.97	2,630.03
Sub-Total - - - -	$ 16,018.00	$ 10,838.35	$ 5,179.65
PROCESS ENGINEERING - -			
Process Development	$ 3,500.00	$ 3,056.95	$ 443.05
Processing	26,000.00	23,520.23	2,479.77
Trial Run	7,500.00	.00	7,500.00
Sub-Total - - - -	$ 37,000.00	$ 26,577.18	$10,422.82
TOOL DESIGN - -			
Design	$ 41,000.00	$ 26,777.68	$14,222.32
Process Sketching	4,000.00	1,373.34	2,626.66
Tool Revisions	12,500.00	.00	12,500.00
Sub-Total - - - -	$ 57,500.00	$ 28,151.02	$29,348.98
MISCELLANEOUS - -			
Consumer - Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
Pilot Operations	19,500.00	2,190.33	17,309. 67
Sub-Total - - - -	$ 21,000.00	$ 2,225.77	$18,776.23
GRAND TOTAL - - -	$174,100.00	$103,156.93	$87,913.07

EXPENDITURES for Week Ending Feb. 22, 1946

Design	$ 311.41
Specifications	536.21
Process Engineering	551.84
Tool Design	1,214.64
Miscellaneous	650.84
TOTAL	$3,264.94

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REC. R.A.A.H.
FEB 28 1946

Project No. [redacted]

Project Title M/721 & 722 Bolt Action High Power Rifle

FINANCIAL STATUS AS OF February 15, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN--			
Investigation	$ [redacted]	$ [redacted]	$ .00
Design	[redacted]	[redacted]	.00
Model Making	[redacted]	[redacted]	.00
Design Revisions	[redacted]	[redacted]	[redacted]
Sub-Total	$ [redacted]	$ [redacted]	$ [redacted]
SPECIFICATIONS--			
Testing	$ [redacted]	$ [redacted]	$ [redacted]
Specifications	[redacted]	[redacted]	[redacted]
Engineering Files	[redacted]	.00	[redacted]
Sub-Total	$ [redacted]	$ [redacted]	$ [redacted]
PROCESS ENGINEERING--			
Process Development	$ [redacted]	$ [redacted]	$ [redacted]
Processing	[redacted]	[redacted]	[redacted]
[redacted]			
Trial Run	[redacted]	.00	[redacted]
Sub-Total	$ [redacted]	$ [redacted]	[redacted]
TOOL DESIGN--			
[redacted]	$	$	$
Design	[redacted]	[redacted]	[redacted]
Process Sketching	[redacted]	[redacted]	[redacted]
Tool Revisions	[redacted]	.00	[redacted]
Sub-Total	$ [redacted]	$ [redacted]	[redacted]
MISCELLANEOUS--			
Consumer Accpt. Eval.	$ [redacted]	$ [redacted]	$ [redacted]
[redacted]			
Pilot Operations	[redacted]	[redacted]	[redacted]
Die Casting			
Sub-Total	$ [redacted]	$ [redacted]	[redacted]
GRAND TOTAL	[redacted]	[redacted]	[redacted]

EXPENDITURES for Week Ending 2/15/46

Design	$ [redacted]
Specifications	[redacted]
Process Engineering	[redacted]
Tool Design	[redacted]
Miscellaneous	[redacted]
TOTAL	[redacted]

G. O. Clifford
G. R. McCormick
[redacted]
F. E. Hollyford
[redacted]
R. Smith
R. E. Gross
R. E. Smith
W. Holloway
File

Project No. PTD-181

Project Title M/721 & 722 Bolt Action High Power Rifle

FINANCIAL STATUS AS OF February 8, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN--			
Investigation	$ 500.00	$ 500.00	$ .00
Design	12,410.00	12,410.00	.00
Model Making	15,672.00	15,701.57	(29.57)
Design Revisions	16,000.00	11,268.65	4,730.65
Sub-Total	$ 42,582.00	$37,880.22	$ 4,701.08
SPECIFICATIONS--			
Testing	$ 9,200.00	$ 7,926.03	$ 1,273.97
Specifications	4,000.00	2,345.52	1,654.48
Engineering Files	2,818.00	.00	2,818.00
Sub-Total	$ 16,018.00	$10,271.55	$ 5,746.45
PROCESS ENGINEERING--			
Process Development	$ 3,500.00	$ 2,981.11	$ 518.89
Processing	26,000.00	22,358.80	3,641.20
[redacted]			
Trial Run	7,500.00	.00	7,500.00
Sub-Total	$ 37,000.00	$25,339.91	$11,660.09
TOOL DESIGN--			
[redacted]			
Design	$ 41,000.00	$21,467.51	$19,532.49
Process Sketching	4,000.00	1,329.74	2,670.26
Tool Revisions	12,500.00	.00	12,500.00
Sub-Total	$ 57,500.00	$22,797.05	$34,702.95
MISCELLANEOUS--			
Consumer Accpt. Eval.	$ 1,500.00	$ 33.44	$ 1,466.56
[redacted]			
Pilot Operations	19,500.00	989.96	18,510.04
Die Casting			
Sub-Total	$ 21,000.00	$ 1,023.40	$19,976.60
GRAND TOTAL	$174,100.00	$97,312.83	$76,787.17

EXPENDITURES for Week Ending 2/8/46

Design	$ 292.24
Specifications	171.44
Process Engineering	1,005.58
Tool Design	2,587.69
Miscellaneous	199.56
TOTAL	$4,256.51

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

[redacted]

REC. R.A.A.H. FEB 5 1946

Project No. [redacted]

Project Title [redacted] Bolt Action High Power Rifle

FINANCIAL STATUS AS OF [redacted]

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN--			
Investigation	$ [redacted]	$ [redacted]	$ .00
Design	[redacted]	[redacted]	[redacted]
Model Making	[redacted]	[redacted]	[redacted]
Design Revisions	[redacted]	[redacted]	[redacted]
Sub-Total	$ [redacted]	[redacted]	$ [redacted]
SPECIFICATIONS--			
Testing	$ [redacted]	$ [redacted]	$(1,220.75)
Specifications	[redacted]	[redacted]	(35.59)
Engineering Files	[redacted]	.00	[redacted]
Sub-Total	$ [redacted]	$ [redacted]	$ (254.54)
PROCESS ENGINEERING--			
Process Development	$ [redacted]	$ [redacted]	$ (260.68)
Processing	[redacted]	[redacted]	(15,532.15)
Methods Engineering	[redacted]	.00	[redacted]
Trial Run			
Sub-Total	$ [redacted]	[redacted]	$(8,792.85)
TOOL DESIGN--			
Design Procurement	$ [redacted]	[redacted]	[redacted]
Design	[redacted]	[redacted]	[redacted]
Process Sketching	[redacted]	[redacted]	[redacted]
Tool Revisions			
Sub-Total	$ [redacted]	[redacted]	[redacted]
MISCELLANEOUS--			
Consumer Accpt. Eval.	$ [redacted]	$ [redacted]	$ [redacted]
Pilot Plant Procurement	[redacted]	.00	[redacted]
Pilot Operations	[redacted]	[redacted]	[redacted]
Die Casting			
Sub-Total	$ [redacted]	$ [redacted]	[redacted]
GRAND TOTAL	[redacted]	[redacted]	[redacted]

EXPENDITURES for Week Ending [redacted]

Design	$ [redacted]
Specifications	[redacted]
Process Engineering	[redacted]
Tool Design	[redacted]
Miscellaneous	[redacted]
TOTAL	[redacted]

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

E. O. Clifford
C. L. McCarthy
R. A. H. Hemmerich
T. B. Nettleton
J. Hammond
K. Smith
R. E. Speas
R. M. Smith
V. Ballweg

REC. R.A.A.H. JAN 29 1946

Project No. 722-161

Project Title Bolt Action High Power Rifle - M/721 & 722

FINANCIAL STATUS AS OF Jan. 18, 1946

	AUTHORIZED ALLOCATION	TOTAL AMOUNT EXPENDED	UNEXPENDED BALANCE
DESIGN--			
Investigation	$ 5,000.00	$ 5,000.00	$ .00
Design	12,780.00	7,910.00	4,780.00
Model Making	14,000.00	10,662.63	3,337.37
Design Revisions	10,320.00	10,460.10	(140.10)
Sub-Total	$ 45,100.00	$37,232.73	$ 7,867.27
SPECIFICATIONS--			
Testing	$ 6,800.00	$ 7,897.62	$(1,097.62)
Specifications	2,200.00	2,181.45	18.55
Engineering Files	1,000.00	.00	1,000.00
Sub-Total	$ 9,700.00	$ 9,779.07	$ (79.07)
PROCESS ENGINEERING--			
Process Development	$ 2,800.00	$ 2,821.51	$ (21.51)
Processing	7,000.00	19,787.71	(12,787.71)
Methods Engineering	5,000.00	.00	5,000.00
Trial Run			
Sub-Total	$ 14,800.00	$22,279.22	$(7,779.22)
TOOL DESIGN--			
Design Procurement	$ 35,000.00	$11,068.33	$23,931.67
Design	10,000.00	5,231.35	4,768.65
Process Sketching	5,000.00	1,264.10	1,735.90
Tool Revisions			
Sub-Total	$ 48,000.00	$17,565.78	$30,434.22
MISCELLANEOUS--			
Consumer Accpt. Eval.	$ 3,000.00	$ 33.44	$ 2,966.56
Pilot Plant Procurement	1,000.00	.00	1,000.00
Pilot Operations	11,800.00	780.00	11,020.00
Die Casting			
Sub-Total	$ 15,800.00	$ 813.44	$14,986.56
GRAND TOTAL	$151,100.00	$87,668.24	$45,431.76

EXPENDITURES for Week Ending 1/18/46

Design	$ 358.06
Specifications	835.82
Process Engineering	1,122.88
Tool Design	4,897.85
Miscellaneous	
TOTAL	$6,152.81

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REC. R.A.D.
JAN 28 1946

CC: W. Holloway
E. A. A. Hunteshal
F. B. Rutherford
J. Hammond
R. H. Grant
E. M. Smith

January 28, 1946

TO: F. Selwood

FROM: G. L. Smith

SUBJECT: CORRECTION OF WORK ORDERS PROJECT FTD-151

Please correct the following Work Orders to read "Transfer charges to FTD-151-1" :

70270
70271
70306

Please correct the following Work Orders to read "Transfer charges to FTD-151-2" :

70272	70241	70127	70301
70273	70259	70131	70302
70274	70262	70139	70305
70275	70294	70151	70304
70276	70297	70158	70305
70277	70298	70170	70306
70278	70299	70245	70307
70279	70270	70289	70308
70284	70295	70292	70309
70288	70297	70295	70148
70290	70245	70298	70195
70292	70259	70312	70252
70253	70248	70134	70244
70139	70241	70196	70281
70148	70245	70199	70293
70299	70195	70309	70296
70279			

G. L. Smith
Project Engineer
Army Division
Technical Department

GLSsle

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CC: G. R. McCormick
~~H. A. A. Mantschal~~
P. B. Rutherford
R. H. Grace
W. Holloway
J. Hammond
R. M. Smith

REC. R.A.A.H. JAN 21 1946

January 18, 1946

TO: F. Selwood

FROM: G. L. Smith

SUBJECT: CHANGE IN NUMBERS - PROJECT PTR-5482

Please close out the following plant orders effective immediately:

17084	17264	70159	17291
17085	17265	70170	
17086	17266	70200	
17215	17267	70218	
17248	17268	70242	
17108	17285	70244	

G. L. Smith
Project Engineer
Arms Division
Technical Department

GLS/le

BARBER - PRESALE R 0126219

cc: R. A. A. Hantschel
F. B. Rutherford
S. M. Alvis
W. Holloway
J. Hammond
R. H. Smith
R. H. Grace

January 18, 1948

TO: C. R. McCormick

FROM: C. L. Smith

SUBJECT: M/721 & 722 - PROJECT [redacted]

Effective immediately the subject project is changed to FEB-151. Below is a list of all open Work Orders on this project on which charges can be accepted:

Present Number	Description	Old Number
70270	Provide Parts - Walker	17084
70271	Final Drawings - "	17085
70272	Specifications - Grace	17086
70273	Testing - Knox	17248
70274	Bolt Head - Benner	17109
70275	Procurement Purchased Parts - R. H. Smith	17264
70276	Process - Receivers - Quist	17265
70277	Process - Bolt Assembly - Quist	17266
70278	Process - Stock & Barrel - Travastino	17267
70279	Process - General Engineering - R. H. Smith	17268
70280	Process - Stock - R. H. Smith	17269
70281	.270 Winchester Caliber -	
70282	Engineering Files - W. Holloway	
70139	Lem. Roberts Caliber Testing	
70283	Process - Small Auto Screw Mach.Parts - R. H. Smith	
70284	Barrel Property Test - C. Benner	
70138	Brass Handle & Bolt - C. Benner	
70140	Brass Ball to Handle - C. Benner	
70142	Brass Front Sight Ramp - C. Benner	
70178	Writing Process Sheets - R. H. Smith	
70285	Trigger Stop Screw - R. H. Smith	
70287	Trigger Adjusting Screw - R. H. Smith	
70288	Safety Pivot Pin - R. H. Smith	
70289	Bolt Stop Pin, Sear & Trigger Pin - R. H. Smith	
70240	Receiver Plug Screw - R. H. Smith	
70241	Front and Rear Guard Screw - R. H. Smith	
70242	Ejector Pin - R. H. Smith	
70105	Bolt Head Induction Heating Fixtures	
70127	Process Sketching Receiver - R. H. Smith	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126219

Present Number	Description	Old Number
70151	Design Tools and Gages, Bolt Handle - R.M.Smith	
70150	Cost of Gage Design - R.M. Smith	
70152	Cost of Writing Proc. Insp. Sheets - R.M. Smith	
70153	Proc. Sketching Tools, Fixtures and Gages - R.M. Smith	
70178	Gage Design for Purchased Parts - R.M. Smith	
70194	Design Tools & Gages Ejector - R.M. Smith	
70198	Bolt Body - R. M. Smith	
70199	Bolt Assembly - R. M. Smith	
70200	Trigger Assembly - R. M. Smith	
70201	Design Procurement Cutting Tools etc. - R.M. Smith	
70202	Design Detail of Gages etc. - R.M. Smith	
70203	Check Design Tooling Furnished - R.M. Smith	
70204	Check Design Tooling Furnished - R.M. Smith	
70205	Check Design Tooling Furnished - R.M. Smith	
70206	Check Design Tooling Furnished - R.M. Smith	
70207	Check Design Tooling Furnished - R.M. Smith	
70208	Check Design Tooling Furnished - R.M. Smith	
70209	Check Design Tooling Furnished - R.M. Smith	
70149	Consumer Acceptance Evaluation - S. Alvis	
70195	81.20 Ft. Form Stock - A. Travostino	
70252	Stock Process - G. Moss	
70241	Cold Rolled Barrel - R. Grace	
70245	30 - 06 Testing - G. Kirchem	
70244	.220 Swift Testing - G. Kirchem	
70259	Process Mainspring - Gilmore	
70260	Process Sketching for Main Spring - Gilmore	
70261	Tool Design for Main Spring - Gilmore	
70262	Design and Detail Gages, Jigs, etc. - Gilmore	

All personnel working on the subject project should be immediately informed of these changes. No charges will be accepted after today on any of the 17,000 series plant orders.

G. L. Smith
Project Engineer
Arms Division
Technical Department

GLS/lc

Hentschel

TECHNICAL EXPERIMENT APPROPRIATION REQUEST

Division - Technical
Section - Research Works Ilion
Group: Arms

Date June 29, 1945.

Project No. FTS-3483

Part V
(Formerly: Plant Order L-3121, Project B-425)

Proposed Expenditures (This Part) $ 60,000.

For account of:

	R & M
Category B	
C	60,000.
D	
E	
Other	
Previous Parts	71,100.
TOTAL	$ 131,100.

Distribution by Plants:

Bridgeport	%
Ilion	100 %
Kings Mills	%
Findlay	%

APPROVED: AUG 1 DATE 1945
E. MORRIS
PROJECT ENGINEER
TECHNICAL DIVISION

Authorization is requested to undertake the following investigation in accordance with the attached description:

RECEIVED
AUG 24 1945
W. HOLLOWAY

TITLE: DESIGN FOR MODEL 721 BOLT ACTION HIGH POWER RIFLE

To be commenced On approval

To be completed _____ Prepared by G.R.McCormick

This project conforms to Products Committee Action in Minute #10, dated 7-6-45

Approved:

G. R. McCormick 6-30-45
H. R. Dorr 6-30-45
E. Morris 7-3-45
R. W. Steele 7-5-45
A. J. Greene 7-6-45
B. E. Strader 7-9-45
W. E. Gregg 7-17-45
H. Ellis 7-17-45
R. B. Howard 7-17-45
H. N. Meixner 7-18-45
P. W. Hoge 7-21-45
E. E. Ley 7-23-45
J. W. Thwing 7-24-45
W. A. Haldeman 7-24-45
A. W. Vaughan 7-24-45
G. O. Clifford 7-25-45
R. H. Coleman 7-25-45
M. R. Warden 7-26-45
R. D. Jack 7-26-45
E. L. Bergland 7-26-45-for R & M. Com.
D. F. Carpenter 7-27-45

Authorized: C. K. Davis 8-1-45

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROJECT

DESIGN FOR MODEL 721 BOLT ACTION HIGH POWER RIFLE

PART V

INTRODUCTION:

This project was initiated to design, develop and engineer a Bolt Action Center Fire Rifle to take its place as the lowest cost, repeating, center fire rifle in the Remington line.

On August 12, 1942 a plant order in the sum of $200.00 was approved to cover the preparation of an exploratory project for this purpose. On December 12, 1942 a Part II in the sum of $11,500. was approved to investigate designs for this arm. This Part II designated the original plant order as Part I to the project.

On August 8, 1944 a Part III in the sum of $35,000. was approved to continue the development of the basic bolt action design. This part included the preparation of detail drawings, initiation of process record work, and the building of additional models for test and for submission for consumer acceptance evaluation in the field. Essential work outlined in this part has been completed.

On December 4, 1944 a Part IV to the project in the amount of $24,400. was approved. Money in this part was assigned to tool design as it was foreseen at that time that there was a possibility of immediate initiation of this phase of the work. Due to the urgency of military work, no appreciable tool design work has been completed at this point. These funds remain intact as indicated in Table I.

The status of the work at the present time is that the model guns appear to be highly satisfactory from the cost, safety, and appearance standpoints. Minor alterations in Stock design to meet the requirements of the Products Committee are currently under way. A comprehensive, statistically controlled, functional evaluation has been made, indicating the arm to be most satisfactory. Minor difficulties developed in the Extractor in this test and the Extractor has been redesigned and is currently under test with considerable promise of success. A new and more convenient Bolt Stop Release has been incorporated in the models to be submitted to Products Committee for approval.

Five models in all have been built, one in .30-06 caliber, two in .300 Magnum caliber, and two in .300 Savage caliber. Sufficient models for consumer acceptance evaluation will be turned over to the Development Division on completion of necessary test work.

Immediate work in progress involves the minor variations in the design necessary to incorporate the various calibers designated by the Products Committee.

DESCRIPTION OF PROPOSED WORK:

Under this Part of the project it is proposed to continue work on this arm, in accordance with the attached Schedule. This work will involve the investigation, design, model making, and testing, contingent upon the ultimate list of ammunition to be incorporated in the arm. Necessary engineering work, including process development, process engineering, process & methods engineering, preparation of specifications, and the initiation of tool design work, with the essential contingent items will be undertaken. Detail of the scope of this work is indicated on the Schedule.

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COST OF PROPOSED WORK:

Investigation	$ 5,000.
Design	(2,360.)*
Model Making	4,090.
Testing & Revising	1,740.
Production Drawings	1,130.
Process Development	2,500.
Process Engineering	11,300.
Process & Methods Engineering	6,000.
Specifications	1,000.
Tool Design	28,600.
Engineering Files	1,000.
Total	$ 60,000.

(*) See Table I

NOTE:
All salary and wage figures included Technical Department overhead at 100%

The above estimates for individual items are approximate and may vary, subject to the overall limitation of $60,000.

PATENT SITUATION:

The Patent Division reports that the design is free of patent infringement and contains little, if any, patentable novelty. Any additional features developed for this arm will be submitted promptly to the Patent Division for opinion.

REMARKS:

The economics of this arm are shown in the following Tables II and III attached. As a result of introducing this arm in place of the M/720,

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gross savings before amortization of development are indicated to be $2,579,081.00 over a twelve year period. Net savings over the same period, after deduction of development cost, 4-1/2% Undistributed Expense, and 40% Federal Taxes, are indicated to be $1,378,627. This shows a net return of 37.6% on a total expenditure of $306,400.

This project conforms with Products Committee Action in Minute #10, dated July 6, 1945.

Estimated labor cost over the twelve year period shows a reduction in labor cost of approximately $200,000., or an average of about five (5) men.

The Ilion Works Management is in concurrence as to Technical feasibility and in general agreement with cost estimates as they appear in this project.

The form of this project has been discussed with the R. & M. Group at Ilion, and it is their belief that it conforms to the presently accepted method of preparing and presenting such projects. In general, the R. & M. Group feels that the statements contained in the project are correct and in accordance with the information at hand to which they have access.

Total estimated expenditures for the introduction of this model are herein estimated at $306,400. This compares with a total figure given in the Arms Study original report for "total new money" of $237,800. The difference is accounted for by the inclusion in this project of money for process development, process engineering, specifications, and process & methods engineering, as well as contingent items which are a part of the introduction of a new arm. Expenditures of this type were previously absorbed in the operating overhead as they were largely performed by plant supervisory personnel. They are now the function of the Engineering Section, of the

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KINZER V. REMINGTON

Technical Department, and as such are a part of the cost of introducing a model. Additional funds for this purpose were added to the original Arms Study estimated by the Engineering Dept. and were included in the estimate presented to the Board of Directors for the Reconversion & Modernization Program.

That portion of the funds requested herewith which will be expended in 1945 are included in the Technical Department budget for 1945.

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KINZER V. REMINGTON
BARBER - PRESALE R 0126227
R527215

BARBER - PRESALE R 0126227

TABLE I

	Estimated Total Requirements to Complete Development	Estimated Total Requirements to Dec. 31, 1945	Amount Authorized Parts I-IV	Amount Spent to May 1,1945	Balance Unexpended May 1,1945	Amount Requested Part V (Balance of 1945)
Investigation	$ 5,000.	$ 5,000.	$ ---	$ 5,000.	$ (5,000.)	$ 5,000.
Design	12,700.	12,700.	15,060.	7,910.	7,150.	(2,360.)*
Model Making	14,900.	14,900.	10,810.	11,631.	(821.)	4,090.
Testing & Revising	6,100.	6,100.	4,360.	3,168.	1,192.	1,740.
Production Drawings	4,400.	4,400.	3,270.	16.	3,254.	1,130.
Testing	6,500.	6,500.	6,500.	6,054.	446.	---
Consumer Acceptance	3,000.	3,000.	3,000.	---	3,000.	---
Process Development	2,500.	2,500.	---	745.	(745.)	2,500.
Process Engineering	13,800.	13,800.	2,500.	1,981.	519.	11,300.
Process & Methods Eng.	13,500.	6,000.	---	---	---	6,000.
Specifications	2,200.	2,200.	1,200.	363.	837.	1,000.
Tool Design	53,000.	53,000.	24,400.	83.	24,317.	28,600.
Engineering Files	2,000.	1,000.	---	---	---	1,000.
Set Up Pilot Operations	17,000.	---	---	---	---	---
Tool Revisions	12,500.	---	---	---	---	---
Trial Run	5,000.	---	---	---	---	---
Total	$ 174,100.	$ 131,100.	$ 71,100.	$ 36,951.	$ 34,149.	$ 60,000.
Tool Manufacture	132,300.					
Total	$ 306,400.					

(*) Due to reallocation of funds within total estimate to allow investigation of additional calibers.

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BARBER - PRESALE R 0126228

BARBER - PRESALE R 0126228

TABLE II

COMPUTATION OF GROSS PROFIT OR LOSS M/720 VS. M/721-722
(1947-1958 INCLUSIVE)

	Total Including M/720						Total Including M/721-722						
	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	Total	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	Total	Difference
Sales Forecast - Qty.	294,360	238,900	183,950	206,400	1,651,200	2,574,810	311,160	251,400	194,050	219,400	1,755,200	2,731,210	156,400
Outside Sales	4,600,286.	3,868,960.	3,068,946.	3,675,693.	29,405,544.	44,619,429.	4,933,198.	4,114,360.	3,269,550.	3,942,513.	31,540,104.	47,799,725.	3,180,296.
Factory Cost:													
Direct Material	418,255.	354,763.	277,620.	352,601.	2,820,808.	4,224,047.	458,167.	384,488.	301,609.	383,371.	3,066,968.	4,594,603.	370,556.
Direct Labor	819,297.	689,221.	550,876.	520,002.	4,160,016.	6,739,412.	836,201.	700,546.	561,289.	538,092.	4,304,736.	6,940,864.	201,452.
Expense:													
Direct & Indirect	1,778,842.	1,635,744.	1,423,661.	1,440,170.	11,521,360.	17,799,777.	1,780,701.	1,636,990.	1,424,806.	1,442,160.	11,537,280.	17,821,937.	22,160.
Fixed	285,052.	271,829.	248,587.	242,943.	1,943,544.	2,991,955.	285,052.	271,829.	248,587.	242,943.	1,943,544.	2,991,955.	---
Total Expense	2,063,894.	1,907,573.	1,672,248.	1,683,113.	13,464,904.	20,791,732.	2,065,753.	1,908,819.	1,673,393.	1,685,103.	13,480,824.	20,813,892.	22,160.
Total F.C.	3,301,446.	2,951,557.	2,500,744.	2,555,716.	20,445,728.	31,755,191.	3,360,121.	2,993,853.	2,536,291.	2,606,566.	20,852,528.	32,349,359.	594,168.
Reserve for Inv.Adj.	99,043.	88,547.	75,022.	51,114.	408,912.	722,638.	100,804.	89,816.	76,089.	52,131.	417,048.	735,888.	13,250.
Deferred Tool Cost	135,342.	115,330.	88,743.	120,152.	961,216.	1,420,783.	124,488.	106,298.	82,409.	115,580.	924,640.	1,353,415.	(67,368.)
Total Factory Cost	3,535,831.	3,155,434.	2,664,509.	2,726,982.	21,815,856.	33,898,612.	3,585,413.	3,189,967.	2,694,789.	2,774,277.	22,194,216.	34,438,662.	540,050.
G.&A. Selling & Del.	714,516.	608,067.	498,242.	587,842.	4,702,736.	7,111,403.	714,516.	608,067.	498,242.	587,842.	4,702,736.	7,111,403.	---
Total Comm. Cost	4,250,347.	3,763,501.	3,162,751.	3,314,824.	26,518,592.	41,010,015.	4,299,929.	3,798,034.	3,193,031.	3,362,119.	26,896,952.	41,550,065.	540,050.
Net Profit or Loss (before taxes)	349,939.	105,459.	(93,805.)	360,869.	2,886,952.	3,609,414.	633,269.	316,326.	76,519.	580,394.	4,643,152.	6,249,660.	2,640,246.
Adjustment of Sales Price -(Original M/721-722 @ $23.50) (Revised M/721 - $23.89; M/722 - $21.83)													(74,765.)
Adjusted Total Difference													2,565,481.
Adjustment of Tooling Cost - (Original $171,700; Revised $185,300.)													13,600.
Adjusted Total Difference													2,579,081.

NOTE:
Original selling price and tooling cost included in Arms Study figures.
Revised selling price and tooling costs represent current estimate.

M/720 VS. M/721-722

Gross Savings (Before Dev. Amor.)	2,579,081.
Less: M/721-722 Development (Not Inc. Tooling)	173,100.
Gross Savings	2,405,981.
Less: 4.5% Undistributed Expense	108,269.
40% Federal Taxes	919,085.
Net Savings - 12 Yr. Period	1,378,627.
" " - Average Year	114,886.
Total Expenditure	385,400. (After deduction of $1,000. for o.k. guns - See Table I)
Net % Return on Expenditure	37.6

6-29-45

R2527216

METHOD OF ESTABLISHING PROFIT & LOSS CALCULATION IN TABLE II
M/720 VS. M/721-722

The figures used for the Profit & Loss calculation on the right-hand side of the Report, which includes the new model gun, were taken from the Arms Study Report.

To determine the Profit & Loss calculation appearing on the left-hand side of the Report, which includes the old model gun and excludes the new model gun, the following steps were taken:

Quantities - Arms Study total, less new model gun total (Forecast #5), plus old model gun total (Forecast #4).

Example (Normal Year)

Arms Study Total	219,400
Less - Model 721-722	15,000
Plus - Model 720	2,000
Adjusted Total	206,400

Net Receipts - Arms Study total, less new model gun net receipts, plus old model gun net receipts, based on quantities above.

Example (Normal Year)

Arms Study Total	$3,942,513.
Less - Model 721-722	352,500.
15,000 x 23.50	
Plus - Model 720	85,680.
2,000 x 42.84	
Adjusted Total	3,675,693.

Direct Material - Arms Study total, less new model gun, plus old model gun at rates used in Arms Study.

Example (Normal Year)

Arms Study Total	383,371.
Less - Model 721-722	34,950.
15,000 x 2.33	
Plus - Model 720	4,180.
2,000 x 2.09	
Adjusted Total	352,601.

Direct Labor - Arms Study total, less new model gun, plus old model gun at rates used in Arms Study.

Example (Normal Year)

Arms Study Total	$538,092.
Less - Model 721-722 15,000 x 3.01	45,150.
Plus - Model 720 2,000 x 13.53	27,060.
Adjusted Total	520,002.

Direct and Indirect Expense - Arms Study total adjusted by 11% of total change in labor costs between calculation including new model gun and calculation including old model gun. This adjustment is for change in cost of Industrial Relations expense. No other adjustment made as difference in total direct cost did not appear to justify change in this item.

Example (Normal Year)

Direct Labor reduction (See Direct Labor caption-this report)	$ 18,090.
11%	1,990.
Arms Study Total	1,442,160.
Adjusted Total	1,440,170.

Fixed Expense - Arms Study total used. No change.

Inventory Adjustment - 3rd, 4th, and 5th Post-War Years were computed at 3% of Factory Cost. Normal Year was figured at 2% of Factory Cost.

Deferred Tool Cost - Arms Study total, less new model gun cost, plus old model gun cost. Old model gun cost established as follows:

Original cost of tooling was divided by the number of guns sold, plus forecast of future sales. An anticipated expenditure of $78,000. for tooling if M/720 is continued in line was divided by forecast of sales to establish unit cost of this item. The two units thus established were added to determine unit cost applicable to future sales.

Example

M/720 original tooling cost			$209,717.
Units to 1947	13,313		
Units 1948	2,500		
Units 1949	1,900		
Units 1950-1958	18,000		
Total Units	35,713		
Unit Cost 209,717 ÷ 35,713			5.87
Additional tooling cost		$78,000.	
Units 1947	3,200		
Units 1948	2,500		
Units 1949	1,900		
Units 1950-1958	18,000		
Total Units	25,600		
Unit Cost 78,000. ÷ 25,600			3.05
Total Unit Cost			8.92

Normal Year - 2,000 x 8.92 = $ 17,840.

Arms Study Total	115,580.
Less - Model 721-722 15,000 x .88	13,268.
Plus Model 720 2,000 x 8.92	17,840.
Adjusted Total	120,152.

G. & A. Expense - Arms Study Total used. No change.

TABLE III

COST ELEMENT COMPARISON

MODEL 720 VS. MODEL 721-722

Based on Normal Year of 12-Year Calculation

	MODEL 720		MODEL 721-722		Net Gain or Loss
	Unit	Total	Unit	Total	
Quantity	2,000		15,000		
Net Sales	$ 42.84	$ 85,680.	$ 23.17	$ 347,535.	$ 261,855.
Material	2.09	4,180.	2.33	34,950.	(30,770.)
Labor	13.53	27,060.	3.01	45,150.	(18,090.)
Industrial Relations	1.48	2,960.	.33	4,950.	(1,990.)
Inv. Adj. (on above)	.32	633.	.11	1,650.	(1,017.)
Deferred Tool Cost	8.92	17,840.	.95	14,318.	3,522.
Sub-Total	26.34	52,673.	6.66	101,018.	(48,345.)
Out-of-Pocket Gain	19.55	33,007.	16.51	247,567.	213,510.*
Burden (Industrial Relations excluded)	39.85	79,708.	9.10	136,460.	**
Inv. Adj. (On Burden)	.80	1,594.	.19	2,780.	**
G. & A. Expense	6.81	13,623.	3.53	52,875.	**
Indicated Gross Profit or Loss	(30.96)	(61,918.)	3.69	55,452.	**

Normal Year Gain including M/721-722	$ 580,394.	
Normal Year Gain including M/720	360,869.	
	$ 219,525.	
Adjustment of Sales Price - Orig. Price M/721-722 - $23.50 ea. Revised Price M/721 - $23.89 Revised Price M/722 - 21.83	4,965.	$ 214,560.
Adj. of Tooling Cost - Original M/721-722 Unit Cost $ .88 - Revised $ .95	1,050.	213,510.*

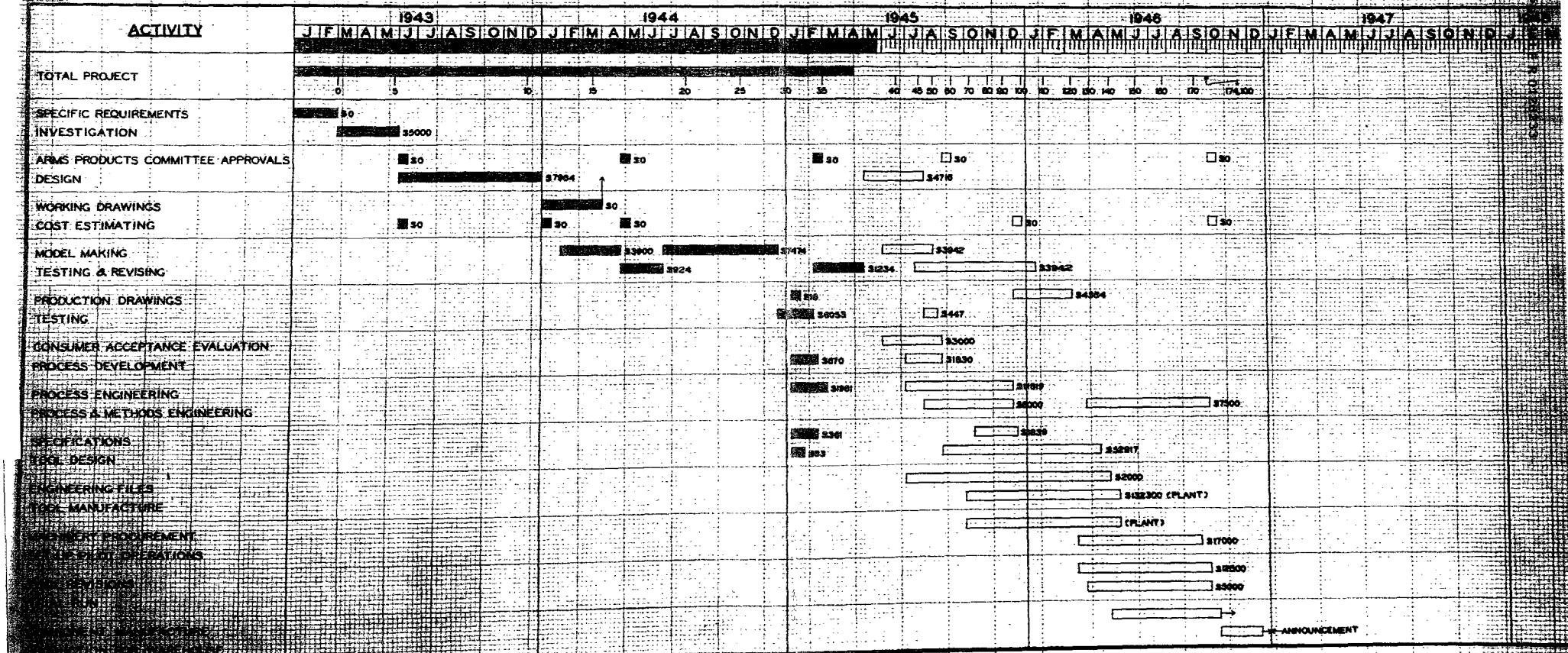
(*) $213,510. is the difference between Model 720 and Model 721-722 based on calculation of Gross Profit or Loss in Normal Year.

(**) These items are not included in "Indicated Profit or Loss". Manner of handling these items subject to interpretation.

6-29-45

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MASTER SCHEDULE
DEVELOPMENT OF MODELS 721 & 722



BARBER - PRESALE R 01262
R2527221

Huntsville

TECHNICAL DEPARTMENT PROJECT

Plant ~~Bridgeport~~ Ilion
Division ARMS
Section

Project No. FTS-3483
Part No. VI

Proposed Expenditures
(This Part) $ 43,000

Date of
First Issue

For Account of:
TECH. DEPT.

Revised Issue Date

Category B
" C 43,000
" D
" E
Other
Previous Parts 131,100

Distribution by Plants:

Bridgeport %
Ilion 100 %
Findlay %

TOTAL $ 174,100

R & M Class 1A

AUTHORIZED: FE (DATE)
PROJECT ENGINEER
TECHNICAL DEPARTMENT

Authorization is requested to undertake the work described and outlined under the following title.

TITLE:

DESIGN FOR MODEL 721 BOLT ACTION HIGH POWER RIFLE

To be commenced

G. R. McCormick
(Prepared by)

To be completed

V. E. Senior
(Issued by)

This Project is X included in the approved Technical Departmen. Program and Budget, 1946.

Those examining Project for information please initial.
Those examining Project for approval please sign.

INITIAL	DATE	SIGNATURE	DATE	SIGNATURE	DATE
		G. R. McCormick	12/21/45		
		R. W. Hughes	12/21/45	G. O. Clifford	1/15/46
		H. R. Dorr	12/21/45	M. R. Warden	1/15/46
		W. G. Burckel	12/25/45	B. F. Strader	1/24/46
		T. D. Coffin	12/27/45	D. F. Carpenter	1/24/46
		H. A. Brown	1/2/46	C. B. Wells	1/24/46
		R. W. Steele	1/4/46	R. H. Coleman	
		A. J. Greene	1/7/46	AUTHORIZED:	
		H. N. Meixner	1/8/46	C. K. Davis	2/1/46
		R. D. Jack	1/11/46		

PROJECT

DESIGN FOR MODEL 721 HIGH POWER BOLT ACTION RIFLE

PART VI

INTRODUCTION:

Development work on the M/721 High Power Bolt Action Center Fire Rifle was initiated in 1942. The purpose of the work was to design, develop and engineer a bolt action center fire rifle to be the lowest cost repeating center fire rifle in the Remington line.

Work has progressed on this arm to a point where satisfactory designs have been developed from which models have been built, and successfully tested. Currently the arm is being processed for production. Tools are being designed and procured, and pilot line machine tool equipment is on order. The arm is scheduled to be announced in January 1947, at which time it is expected that three months' production will be in the warehouse for distribution.

In addition to the development work and engineering work under way, projects have been approved for tool procurement and for pilot line machine tools, which projects are independent of this design project.

This project constitutes a request for the balance of the Technical Department funds forecasted as required for this model and allocated in general as indicated in Table I. It is expected that the funds requested in this Part of the project will constitute all that is necessary for the Technical Department work on this model.

DESCRIPTION OF PROPOSED WORK:

It is proposed to continue work on this arm in accordance with the attached schedule. This work will consist of (a) design revisions necessary for best processing, (b) all phases of the

engineering work, (c) tool design and (d) pilot lot operations. It is estimated that within the scope of this Part of the project, all Technical Department work will be completed on this arm.

COST OF PROPOSED WORK:

The cost of proposed work under this Part of the project is $43,000., this sum to be allocated, in general, as indicated in Table I, attached hereto.

Funds requested herewith constitute estimated requirements to complete the development of this arm in addition to funds already authorized and unexpended as of January 1, 1946. This expenditure has been forecasted in the 1946 Arms Division budget as follows:

Technical Dept. Salaries and Wages	$2,633
Technical Dept. Expense @ 80%	2,107
Assistance from plants	2,600
Stores and Supplies	1,560
Misc. Project Charges	34,100
Total	$43,000

PATENT SITUATION:

The Patent Division reports that the design is free of patent infringement and contains little, if any, patentable novelty. Any additional features developed for this arm will be submitted promptly to the Patent Division for opinion.

REMARKS:

This project conforms with Products Committee action in Minute # 2 dated January 24, 1946.

Estimated labor cost over the 12-year period shows a reduction of approximately $200,000, or an average of about 5 men.

Funds requested herewith will be expended in 1946 and are included in the Technical Department budget for that year.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

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KINZER V. REMINGTON

BARBER - PRESALE R 0126237

TABLE I

	Est. Total Requirements to Complete Development	Amount Authorized Parts I-V	Est. Amount Spent to Dec.31,1945	Balance Unexpended Dec.31,1945	Amount Requested Part VI
Investigation	$ 5,000	$ 5,000	$ 5,000	$ 0	$ 0
Design	7,910	12,700	7,910	4,790	(4,790)
Model Making	14,000	14,900	14,000	900	(900)
Design Revisions	11,500	6,100	10,000	(3,900)	5,400
Production Drawings	0	4,400	0	4,400	(4,400)
Testing	7,250	6,500	7,250	(750)	750
Consumer Acceptance Evaluation	3,000	3,000	1,500	1,500	0
Specifications	4,000	2,200	3,500	(1,300)	1,800
Engineering Files	3,000	1,000	500	500	2,000
Process Development	7,500	2,500	3,000	(500)	5,000
Process Engineering	16,440	13,800	16,440	(2,640)	2,640
Process & Methods Engineering	0	6,000	0	6,000	(6,000)
Trial Run (Technical Approval)	7,500	0	0	0	7,500
Tool Design	16,000	53,000	6,000	47,000	(37,000)
Tool Design Procurement	35,000	0	1,000	(1,000)	35,000
Tool Design Revisions	12,500	0	500	(500)	12,500
Process Sketching	4,000	0	1,000	(1,000)	4,000
Pilot Operations	19,500	0	0	0	19,500
Total	174,100	131,100	77,600	53,500	43,000
Tool Manufacture	132,300				
Total	$306,400				

BARBER - PRESALE R 0126237
R2527225

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126238

TABLE II

COMPUTATION OF GROSS PROFIT OR LOSS M/720 VS M/721-722
(1947-1958 INCLUSIVE)

	Total Including M/720						Total Including M/721-722						
	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	Total	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	Total	Difference
Sales Forecast - Qty.	294,360	238,900	183,950	206,400	1,651,200	2,574,810	311,160	251,400	194,050	219,400	1,755,200	2,731,210	156,400
Outside Sales	4,600,286	3,868,960	3,068,946	3,675,693	29,405,544	44,619,429	4,933,198	4,114,360	3,269,550	3,942,513	31,540,104	47,799,725	3,180,296
Factory Cost:													
Direct Material	418,255	354,763	277,620	352,601	2,820,808	4,224,047	458,167	384,488	301,609	383,371	3,066,968	4,594,603	370,556
Direct Labor	819,297	689,221	550,876	520,002	4,160,016	6,739,412	836,201	700,546	561,289	556,092	4,304,736	6,940,864	201,452
Expense:													
Direct & Indirect	1,778,842	1,635,744	1,423,661	1,440,170	11,521,360	17,799,777	1,780,701	1,636,590	1,424,806	1,442,160	11,537,280	17,821,937	22,160
Fixed	285,052	271,829	248,587	242,943	1,943,544	2,991,955	285,052	271,829	248,587	242,943	1,943,544	2,991,955	--
Total Expense	2,063,894	1,907,573	1,672,248	1,683,113	13,464,904	20,791,732	2,065,753	1,908,819	1,673,393	1,685,103	13,480,824	20,813,892	22,160
Total F.C.	3,301,446	2,951,557	2,500,744	2,555,716	20,445,728	31,755,191	3,360,121	2,993,853	2,536,291	2,606,566	20,852,528	32,349,359	594,168
Reserve for Inv.Adj.	99,043	88,547	75,022	51,114	408,912	722,638	100,804	89,816	76,069	52,131	417,048	735,888	13,250
Deferred Tool Cost	135,342	115,330	98,743	120,152	961,216	1,420,783	124,488	106,298	82,409	115,580	924,640	1,353,415	(67,368)
Total Factory Cost	3,535,831	3,155,434	2,664,509	2,726,982	21,815,856	33,898,612	3,585,413	3,189,967	2,694,789	2,774,277	22,194,216	34,438,662	540,050
G. & A. Selling & Del.	714,516	608,067	498,242	587,842	4,702,736	7,111,403	714,516	608,067	498,242	587,842	4,702,736	7,111,403	--
Total Comm. Cost	4,250,347	3,763,501	3,162,751	3,314,824	26,518,592	41,010,015	4,299,929	3,798,034	3,193,031	3,362,119	26,896,952	41,550,065	540,050
Net Profit or Loss (before taxes)	349,939	105,459	(93,805)	360,869	2,886,952	3,609,414	633,269	316,326	76,519	580,394	4,643,152	6,249,660	2,640,246
Adjustment of Sales Price - (Original M/721-722 @ $23.50 ; Revised M/721 - @$23.89; M/722 - $21.83)													(74,765
Adjusted Total Difference													2,565,481
Adjustment of Tooling Cost - (Original $171,700; Revised $185,300)													-13,600
Adjusted Total Difference													2,551,881

NOTE:
Original selling price and tooling cost included in Arms Study figures.
Revised selling price and tooling costs represent current estimate.

M/720 VS. M/721-722

Gross Savings (Before Dev. Amor.)	2,551,881
Less: M/721-722 Development (Not Inc. Tooling)	173,100
Gross Savings	2,378,781
Less: 4.5% Undistributed Expense	107,045
40% Federal Taxes	908,694
Net Savings - 12 Yr. Period	1,363,042
" " - Average Year	113,587
Total Expenditure	305,400 (After deduction of $1,000 for o.k. guns - See Table I)
Net % Return on Expenditure	37.2%

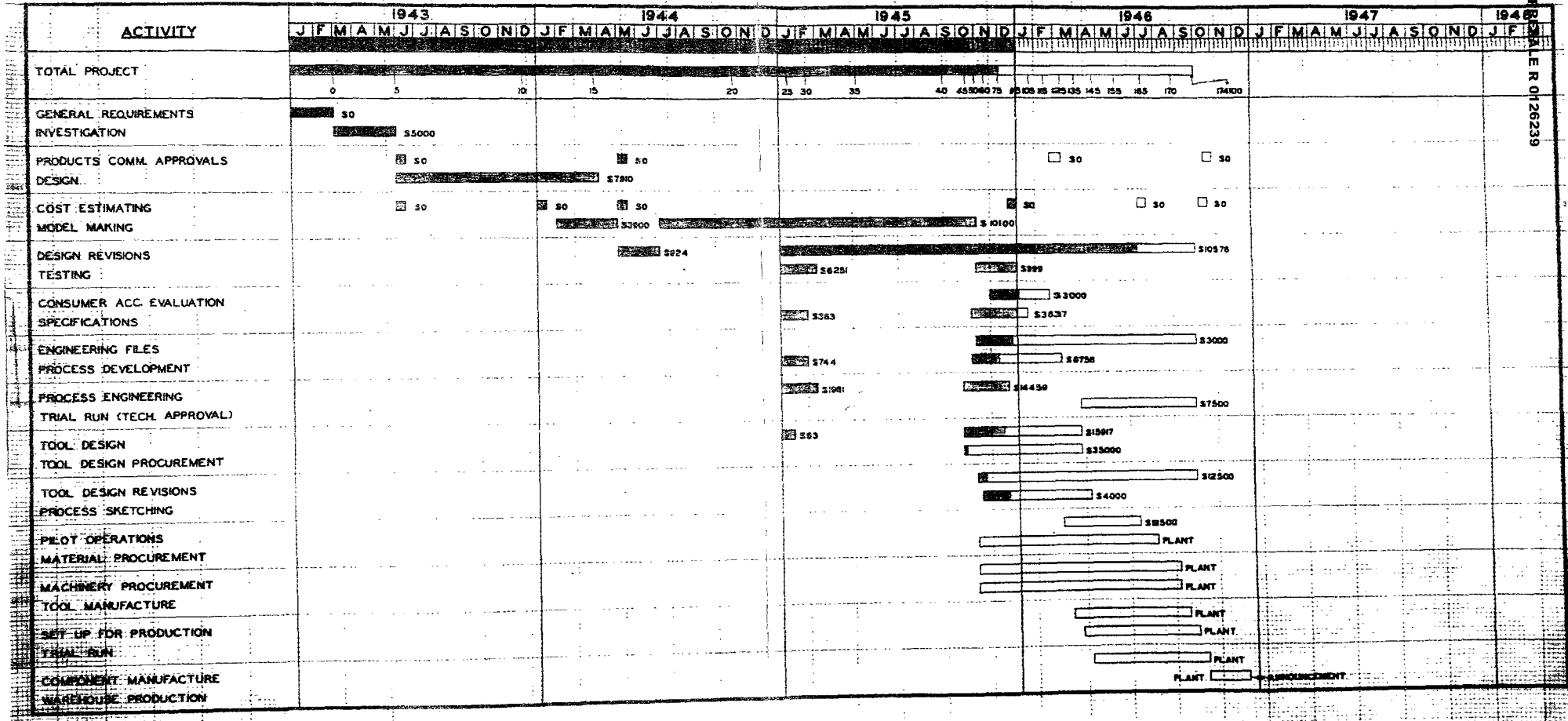
Revised 1-17-46

BARBER - PRESALE R 0126238
R2527226

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MASTER SCHEDULE

DEVELOPMENT OF MODELS 721 & 722



BARBER - PRESALE R 0126239
BARBER - PRESALE R 0126239
R2527227

LAB. I - DWR. 84
M72.1 STRENGTH TEST
STRENGTH TESTS

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

C O P Y

MANAGEMENT MEETING

7/22/47

It is to be expected that a High Power Bolt Action Rifle shall be strong. In the Model 721 design this objective has been achieved without adversely affecting gun weight (Max. 7# 12 oz. for 30-06) - (Minute #21 - 1944), or cost, or appearance and balance.

The keystone to this achievement is the shrouded Bolt Head made possible by a new Extractor design, a small spring steel component purchased at a cost of $.085 each. The shrouded Bolt Head and Extractor design was originally conceived for the Models 760 and 740 and applied later to the Model 721. Later in this discussion we shall show exhibits of test results which demonstrate the importance of such an insignificant looking part.

To determine the ultimate strength of the Model 721, we have performed unusual tests which I would like to review with the assistance of the color chart and mechanism layout and samples of "Wreckage".

The important strength features may be listed as follows:

1. Shrouded Bolt Head.
2. Large Locking Area.
3. Solid Firing Pin.
4. Large Area on Barrel Bracket to absorb recoil.
5. Heavy Breech Section.
6. Stronger Stock around Magazine.

(Discuss these features with exhibits).

OTHER FEATURES

Adjustable Target Type Fire Control

Low Scope Mounting

Light Weight

Good lines and balance

Adaptable to High Grade Finish

Suited for [illegible]

Strength Features

1. Shrouded Bolt Head made possible by Extractor design.
   a. Maximum gap at chamber less than thickness of brass in cartridge.
   b. Exhibit A - Cross cut section of M/721 showing head of brass cartridge case being supported by shrouded head - barrel and receiver section. Bolt containing cartridge which produced excessive pressure.
   Exhibit B - Sample Extractor and Bolt - M/721, 30-06 cartridge.
2. Exhibits of strength tests of M/721 and other standard actions.
   a. Comparison of strength features.
   b. Exhibit C - 9 calibers. Cartridges actually fired through a 30-06 M/721. No damage to gun.
   c. Exhibit [redacted] - Comparison of locking area of Bolt Lugs (Springfield, M/70 and M/721 Bolts).
3. Solid Firing Pin
   a. Exhibit E - M/721 and Springfield. Refer to construction drawing.
      1. The firing pin in the M/721 pre pilot line gun withstood 10,000 dry cycles without breakage.
4. Area of Barrel Bracket in Stock
   a. M/721 area twice that of Enfield and M/70. 30% larger than M/70.
5. Heavier Breech and Barrel Section than Mauser, Springfield or M/70.
6. Stock section around Magazine stronger than all other types of bolt action rifles.
7. Other Features -
   a. Adjustable target type fire control.
   b. Low scope mounting.
   c. Light weight.
   d. Good lines
   e. Adaptable for high grade finish
   f. M/721 Action ideally suited for handloading and those interested in wildcat loads because of its superior strength features.

Condition of Guns as shown on Chart

Model 721

B. Annealed Extractor

E. Breech pressure forced Ejector into Firing Pin hole in Bolt Body.

G. Breech pressure cocked Firing Pin

L. "

M. " . Stock broke because of recoil.

N. Breech pressure cocked Firing Pin. Bolt Lugs frozen to Action. Bolt Handle broken attempting to unlock gun. Strength of gun undetermined.

Model 721 (without shrouded Bolt Head)

B. Excessive breech gas pressure cracked stock.

E. Excessive breech gas pressure disintegrated stock.

F. "

J. Excessive breech gas pressure cocked Firing Pin.

K. Excessive breech gas pressure disintegrated stock. Brass from ruptured cartridge leaving gun. Primer left primer pocket.

L. Action failed. Final strength of gun.

Model 1917 Enfield

B. Excessive breech gas pressure.

F. Broken Extractor caused by breech gas pressure.

G. Stock disintegrated by breech gas pressure.

J. Excessive breech gas pressure cocked Firing Pin.

K. "

L. Breech gas pressure deformed Bolt Stop.

M. Left rail of Receiver deformed. Accomplished by breech gas pressure. Further final strength of gun undetermined.

German Mauser

B. Excessive breech gas pressure.

E. Breech gas pressure broke Extractor.

F. Breech gas pressure cocked Firing Pin.

G. Breech gas pressure cocked Firing Pin and disintegrated stock.

L. Final strength of gun. Face of Bolt Head completely cracked.

Model 70 Winchester

B. Excessive breech gas pressure.

D. "

E. "

F. Excessive breech gas pressure cocked Firing Pin. Broke Extractor.

G. Brass from ruptured cartridge leaving gun and lodging in bolt sleeve. Primer leaves primer pocket.

J. "

K. Stock disintegrated because of excessive gas pressure. Brass from ruptured cartridge leaving gun.

L. Final strength of gun. Receiver disintegrated.

1903 Springfield

B. Excessive breech gas pressure cocks Firing Pin.

D. "

E. Excessive breech gas pressure broke Extractor.

F. Brass from ruptured cartridge case leaving gun, lodging in bolt sleeve. Primer leaves primer pocket.

G. "

J. Final strength of gun. Receiver cracked on right side of breech ring. Stock disintegrated.

W. E. Leek/mc
7/18/47

cc: E.J. [redacted]
V.A. [redacted]
E.L. [redacted]
W.E. [redacted]

December 7, 1950

TO: S. M. Alvis

FROM: [redacted] Army

SUBJECT: [redacted]

Four Model 721 rifles were recently tested to compare two styles of bolt. Data is recorded below.

Load - 4 - 220-gr. slug lodged in barrel and super-proof load of 3.4 grams pyrot powder with a [redacted]-gr. bullet

No. 1 - New Style Receiver

Copper brazed, decarburized and heat treated bolt to give a soft shroud.

Results: Barrel failed over chamber, apparently caused by a seam in the barrel.
Receiver ring split
Stock damaged
Bolt intact

No. 2 - New Style Receiver

Bolt - Same as No. 1

Results: Bottom lug of receiver failed in shear.
Bolt lugs not back enough to shear off bolt handle and leave shroud unsupported.
Bolt shroud failed
Firing pin blown to rear past cocked position.
Stock shattered.
Magazine and floor plate bent.

No. 3 - Old Style Receiver

Bolt - Brazed and heat treated simultaneously.

Results: Bolt head separated from bolt sleeve.
Bolt handle torn off.
Bottom lug of receiver failed
Shroud blown from bolt.
Bolt head in receiver but out of line badly.
Stock shattered.
Magazine and floor plate bent.

No. 4 - New Style Receiver

Bolt - same as No. 3

Results: Bottom lug of receiver failed in shear.
Top lug of bolt sheared off.
Bolt shroud blown off.
Bolt handle sheared off.
Bolt blown to rear until stopped by bottom bolt lug wedging in fire control slot.

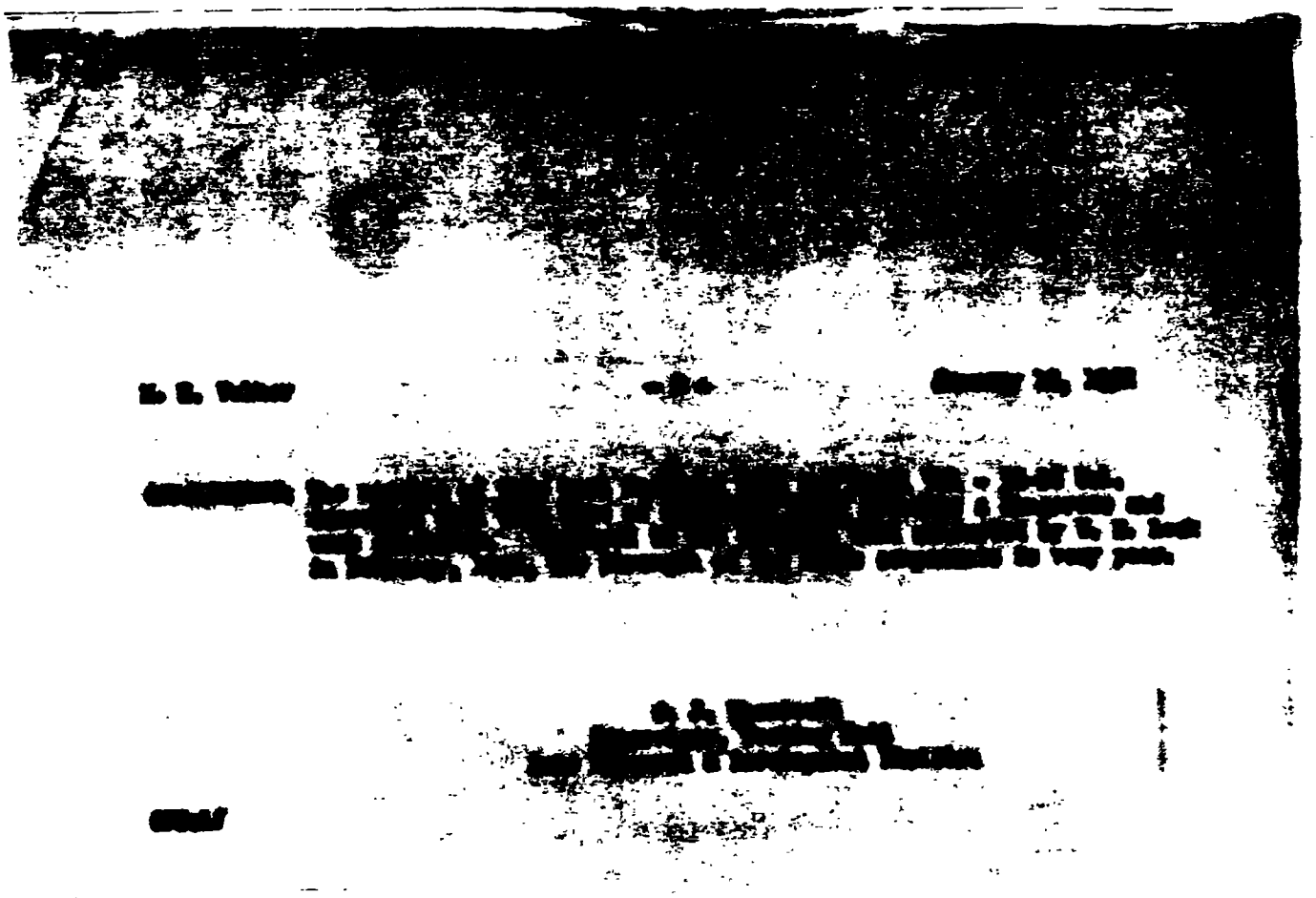
A receiver with a different loading ramp cut is being made and will be tested and reported on at a later date.

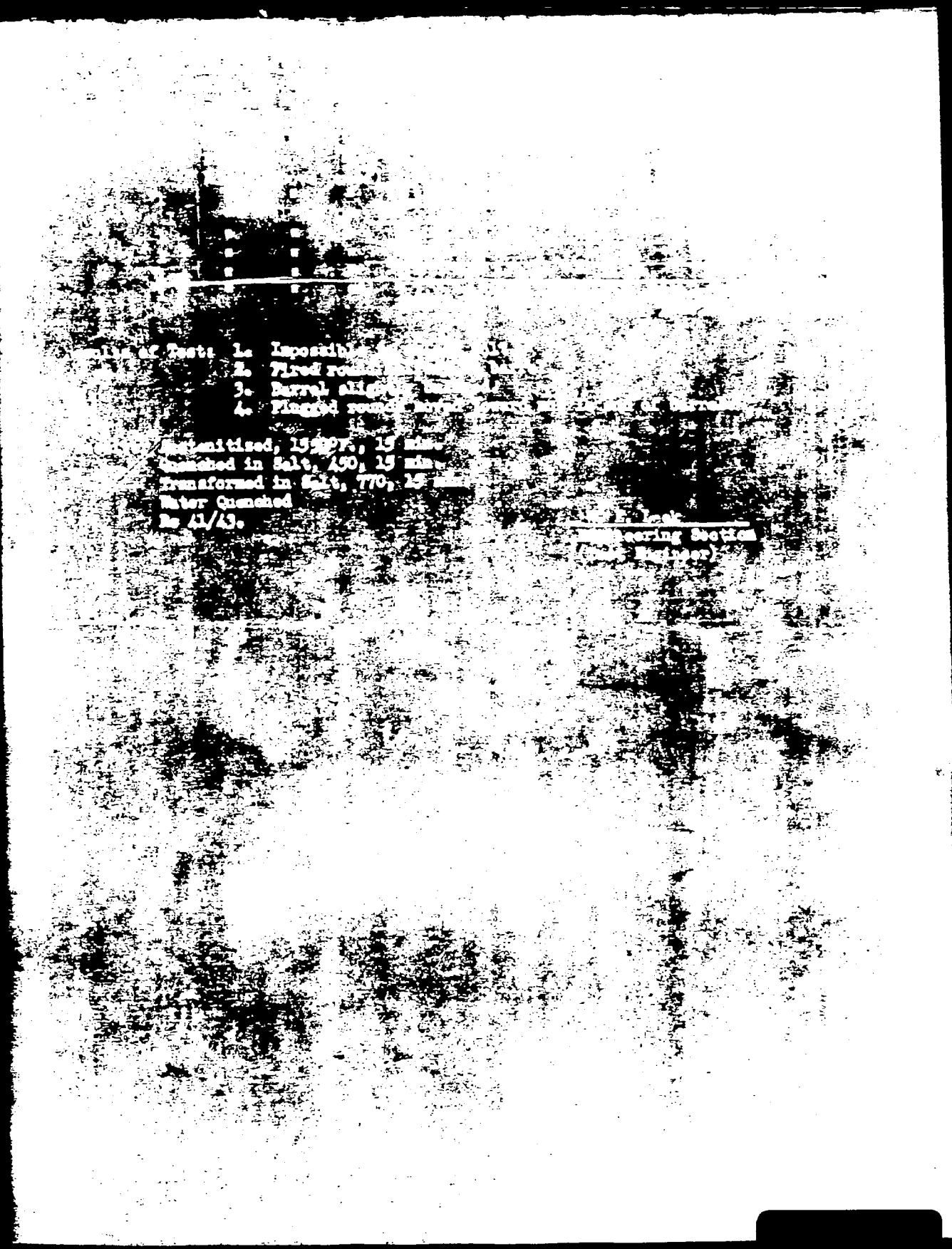
It is our belief that these tests should be continued and an effort made to standardize the test for more uniform results.

R. L. Avery
R. L. Avery
Arms Technical Division

WLA:LJ

[redacted]





Parts: 1a. Impeller
2a. Fixed ro
3a. Barrel sli
4a. Plunged

Austenitized, 1950°F., 15 min.
Quenched in Salt, 450, 15 min.
Transformed in Salt, 770, 15
Water Quenched
Rc 41/43.

Inspection Engineering Section
(Signature)

Ilion, New York
February 8, 1962

TO: R.J. SERVICE

SUBJECT: STRENGTH TEST - M/700 - 7 MM REM MAGNUM
MODIFIED M/Th2 EXTRACTOR

Powder - 4198 Lot #58 [redacted]

1. 3.4 grams - Opened hard by hand.

2. 3.5 grams - Opened with pipe. Ejector and Extractor OK. Blown primer. Dummy OK.

3. 3.6 grams - Opened with pipe. Extracted OK. Ejected by hand. Brass under ext. Blown primer. Dummy OK.

4. 3.7 grams - Opened with pipe. Hammered bolt open. Ext. OK. Vise used to eject shell and remove ctg. from face of bolt. Ejector free. Brass under ext. Poor ejection with Dummy. Blown primer.

5. 3.8 grams - Opened with pipe. Hammered bolt open. Hammered bolt handle to extract shell. Handle brace failed. Ext. claw pulled through rim of ctg. in vise. Blown primer. Case head expanded in barrel C'bore. Dummy extracted and ejected OK.

Test stopped due to bolt handle brace failure.

W.R. Geegin
Test Lab.

WRG:pb

CC: W.E.Leak
G.M.Calhoun
J.H.Lewis

RD-46-S

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____ May 15, 1951

TO: C. J. Theriault

FROM: S. M. Alvis

SUBJECT: MODEL 721 PATENT

We have been requested by the Patent Attorney to obtain additional information relative to strength of the action of the M/721 & 77 design, specifically as it pertains to the shrouded head bolt construction.

It is desired that a comparative test be made to determine difference in strength between a regular M/721 action and one with the recess ground off of the breech end of the barrel. We have results of previous tests where the bolt was ground off flush.

Incidentally, it is understood that Bridgeport will also again need the display which we have from the comparative strength test.

Please charge cost of this work to No. 73153, and to conserve rifles it is suggested that, if possible, the actions submitted to this test be selected from available visual sub-standard guns.

S. M. Alvis
Arms Technical Division

SMA:LJ

G-88-REM

DON'T SAY IT—WRITE IT

TO H. J. Scott DATE 5-16-51

FROM S. M. Alvis

For your information, we have been requested by Bridgeport to conduct some additional ultimate strength tests for the Model 721 action. This apparently is needed by the Patent Attorney in connection with a patent question. The test will be similar to some of those previously run and will be under supervision of C. J. Theriault. According to Wayne Lock, you were interested in being kept informed of any test of this nature being run, especially in view of the fact that there has been a change in personnel for supervising the testing work. We do not entertain any idea that the work will not be carefully done and in accordance with the training of W. E. Lock.

S. M. Alvis
Arms Technical Division

SMA:LJ

CC: C.J.Theriault

THE SAFE WAY IS THE RIGHT WAY

D. P. Report in '47 folder

CC:

April 30th, 1947

TO: H. A. Brown

FROM: W. E. Leek

SUBJECT: STRENGTH FEATURES
M/721 REMINGTON VS. M/70 WINCHESTER

Attached is a brief report of the results obtained by subjecting M/721 Remington and M/70 Winchester rifles to tests of destruction. Numerous other strength tests on the M/721 are covered in a report of pre-pilot testing dated 4/17/47.

In every condition the chamber end of the barrel was plugged with 3 - 220 grain bullets in such a manner that the nose of a loaded round would contact the base of the nearest bullet in the barrel.

The reader's attention is directed to the fact that if the design of the gun will prevent a cartridge case rupture, fracture of the Barrel, Bolt and Receiver will not occur. It is the objective of these tests to prove that such a design is inherent in the M/721 Remington action, making its strength superior to the M/70 Winchester action.

W.E.L.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

STRENGTH FEATURES

M/721 - Photograph A and B show cross section of the Barrel, Bolt and Receiver. Standard ammunition used.

Section A - 1. Slight rupture of base of cartridge case allowed only by expansion of shrouded Bolt Ring.

2. Ring of shrouded Bolt Head, although expanded, retained base of ruptured cartridge.

3. No apparent effect on Barrel.

4. No apparent effect on Receiver.

Section B - 1. Bolt beyond inletted ring unaffected.

2. Receiver unaffected.

Results of Test

1. Impossible to unlock Bolt.
2. Measurements show no movement of the 4 - 220 grain lodged bullets.
3. Firing Pin moved rearward past cocking position but was retained in Bolt.

M/70 Winchester - Photograph C (top). Standard ammunition used.

Results of Test

1. Measurements show no movement of the 4 - 220 grain lodged bullets
2. Barrel was apparently unaffected by this test.
3. Receiver completely fractured as shown in photograph
4. Bolt unaffected but unlocked and moved rearward.
5. The head of the cartridge case had disintegrated.

M/721 - Photograph C (bottom). Same conditions but with a shell, containing ~~72~~ high pressure ~~grains of Bullseye powder above normal proof loading.~~ above proof pressure.

Results of Test

1. Impossible to unlock Bolt.
2. Bolt Handle was broken when subjected to abnormal unlocking pressure.
3. Firing Pin moved rearward past the cocking position but was retained in Bolt.

4. Pressure exerted apparently had no affect on the Bolt, Barrel or Receiver with the exception of swelling the ring of the shrouded Bolt Head.

5. Measurements show that enough force was developed by the shell loaded above proof loading to push the 4 - 220 grain bullets out of the Barrel.

Discussion:

These tests prove that the shrouded Bolt Head in the M/721 Action completely retains the base of the cartridge, not allowing it to expand sufficiently to cause complete rupturing of the cartridge case. On the other Hand, in the M/70 Winchester, the base of the cartridge is not retained within the Bolt and under certain conditions of excess pressure or defective ammunition, this design will allow the cartridge case to expand unsupported to such a degree that the base of the cartridge case will rupture, directing the expanding powder gases against the Receiver section, causing the receiver to fracture.

Conclusion:

It is to be concluded that the design of the M/721 does prevent cartridge case rupture under conditions of excessive chamber pressure or defective ammunition, and that the strength of the M/721 Action is superior to the M/70 Winchester.

6-48-REM

DON'T SAY IT—WRITE IT

TO [redacted] DATE [redacted]

FROM [redacted]

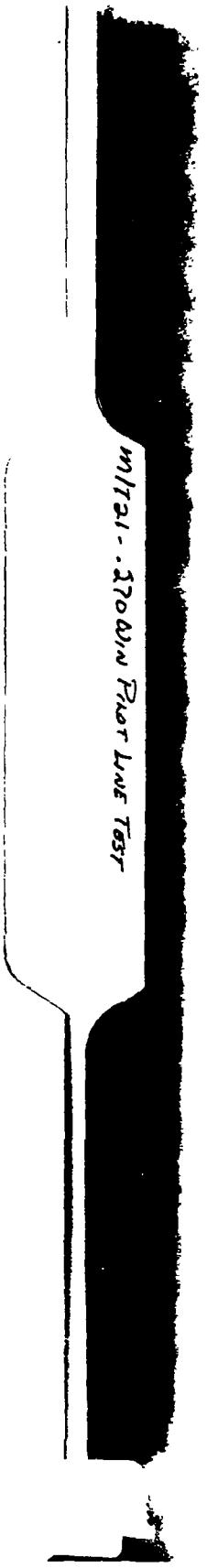
Regarding proposal to adopt a pewtered metal Trigger for the M/7[redacted], after discussing with others in our group, can find no possibilities of trouble unless the physical characteristics of the proposed metal are too brittle at sub-zero temperatures. Believe that this information is possibly from Simms, therefore, suggest checking and advise.

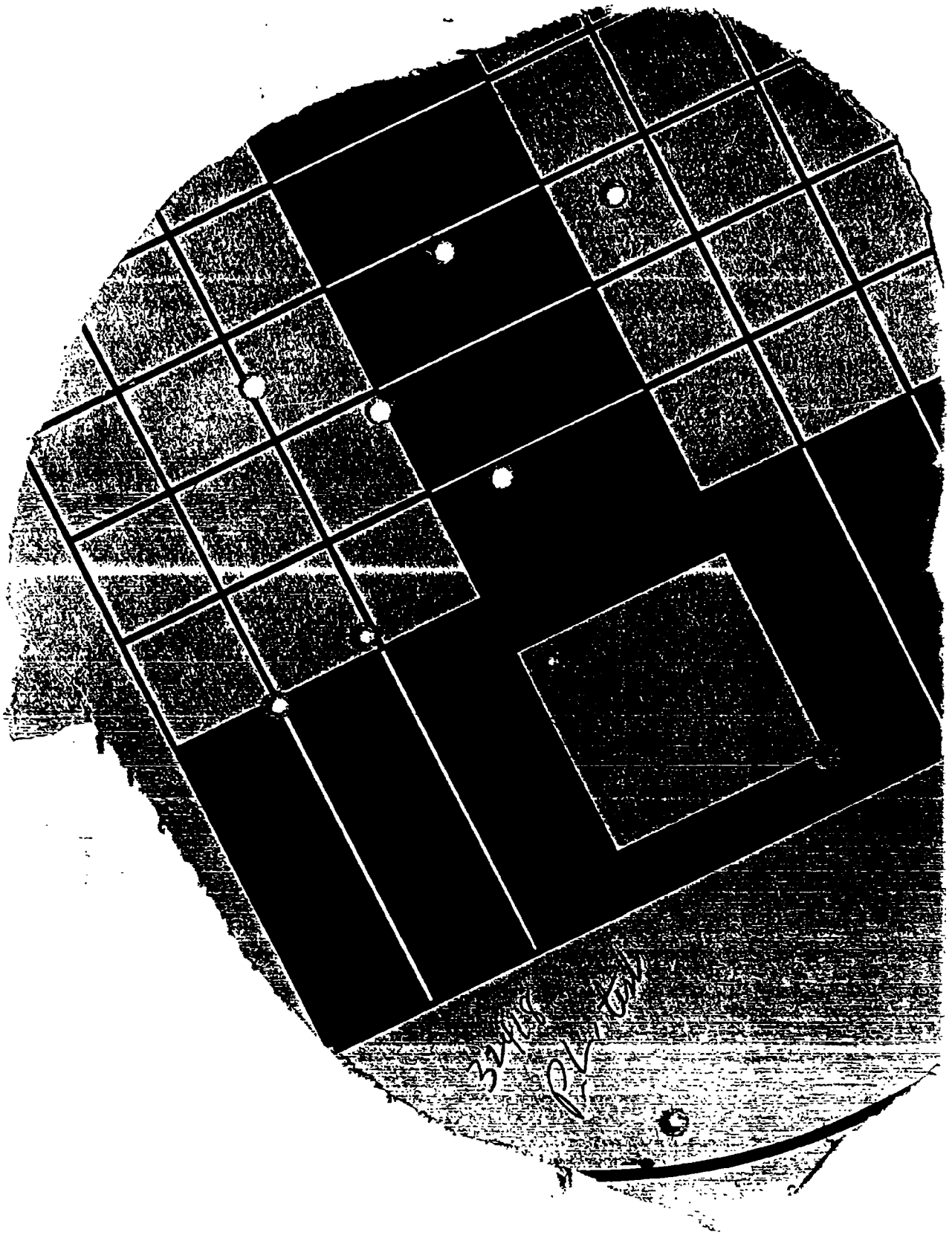
S. M. Mains
S. M. Mains
Arms Technical Division

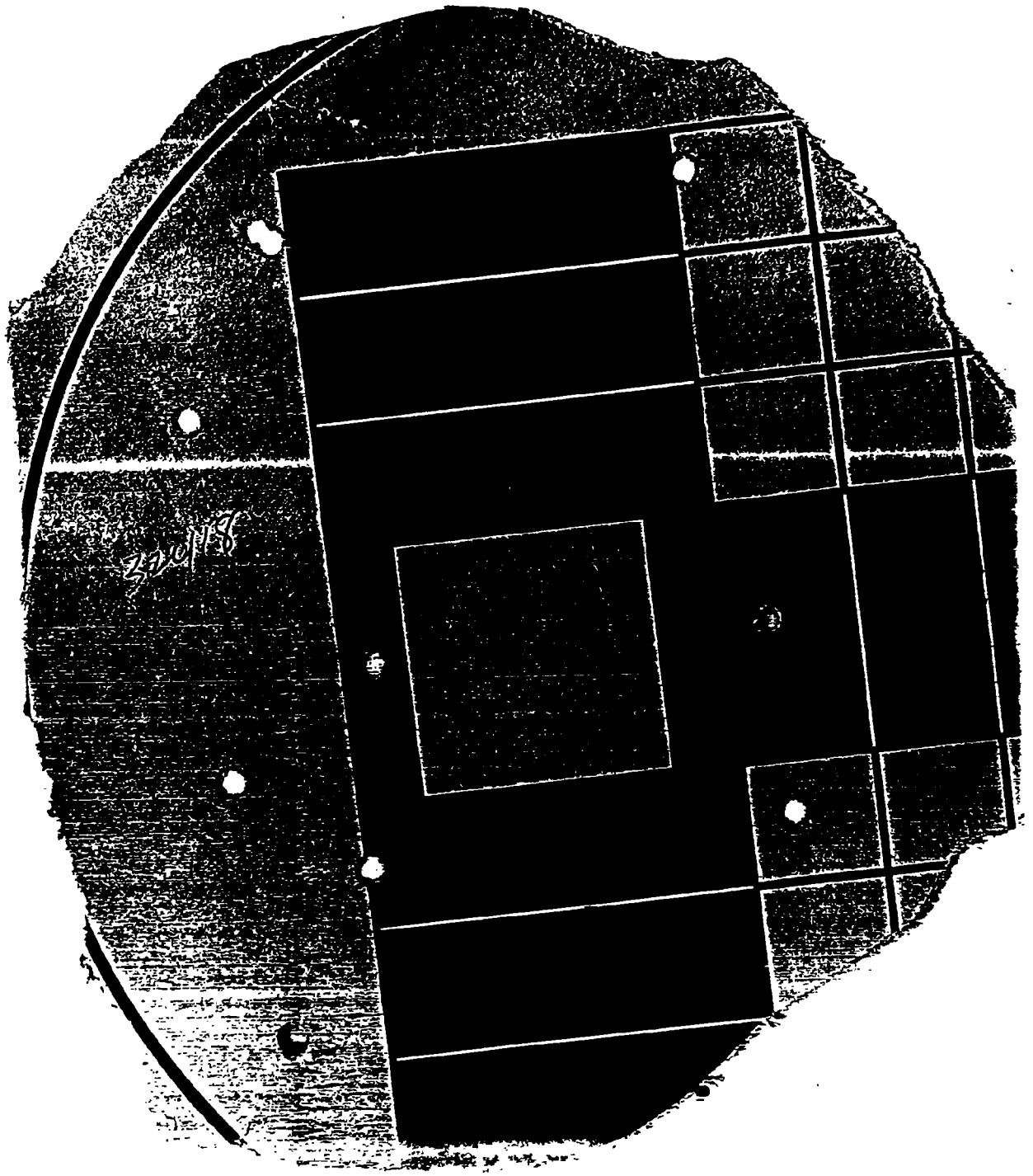
SMM:lf

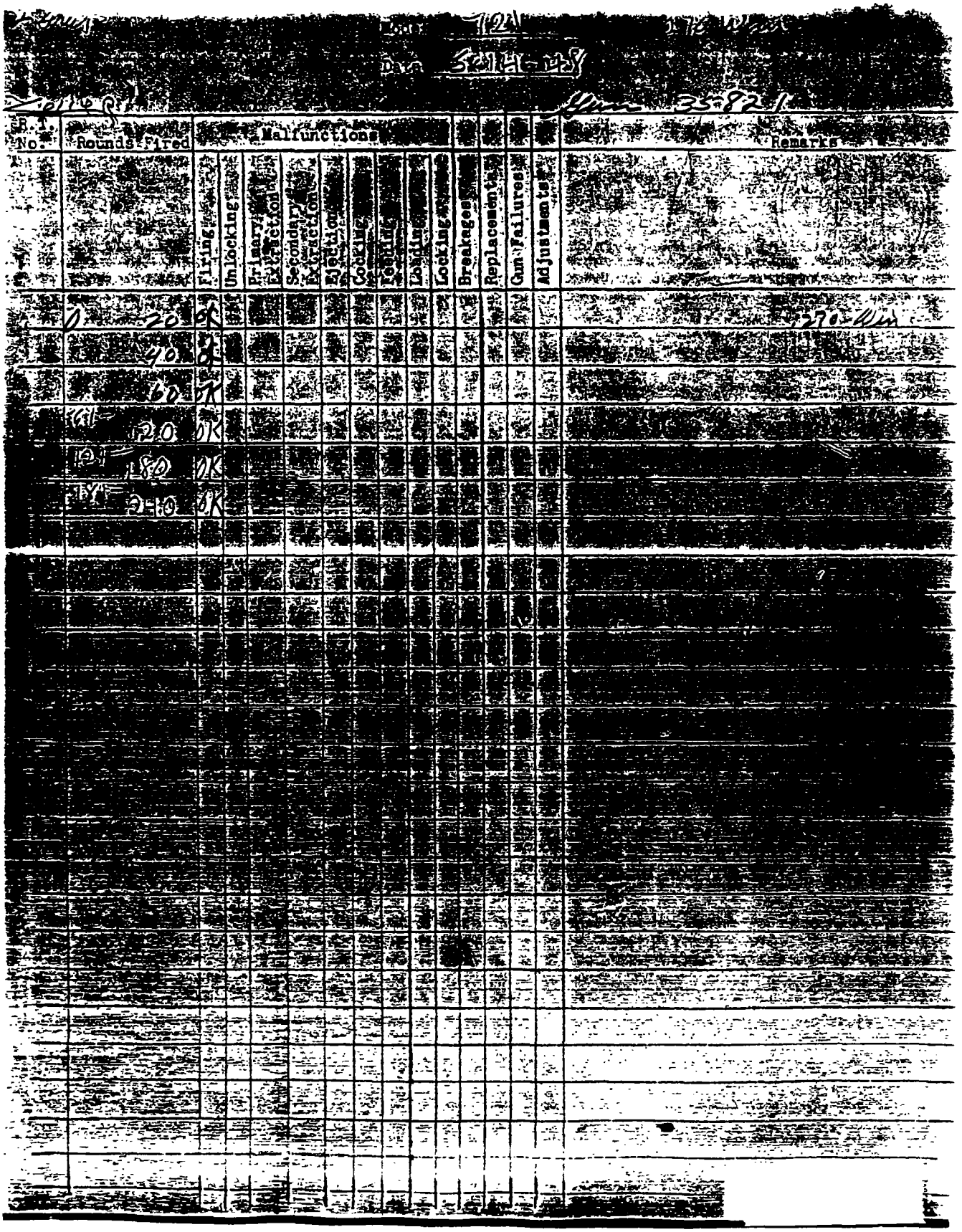
cc: [redacted]

THE SAFE WAY IS THE RIGHT WAY

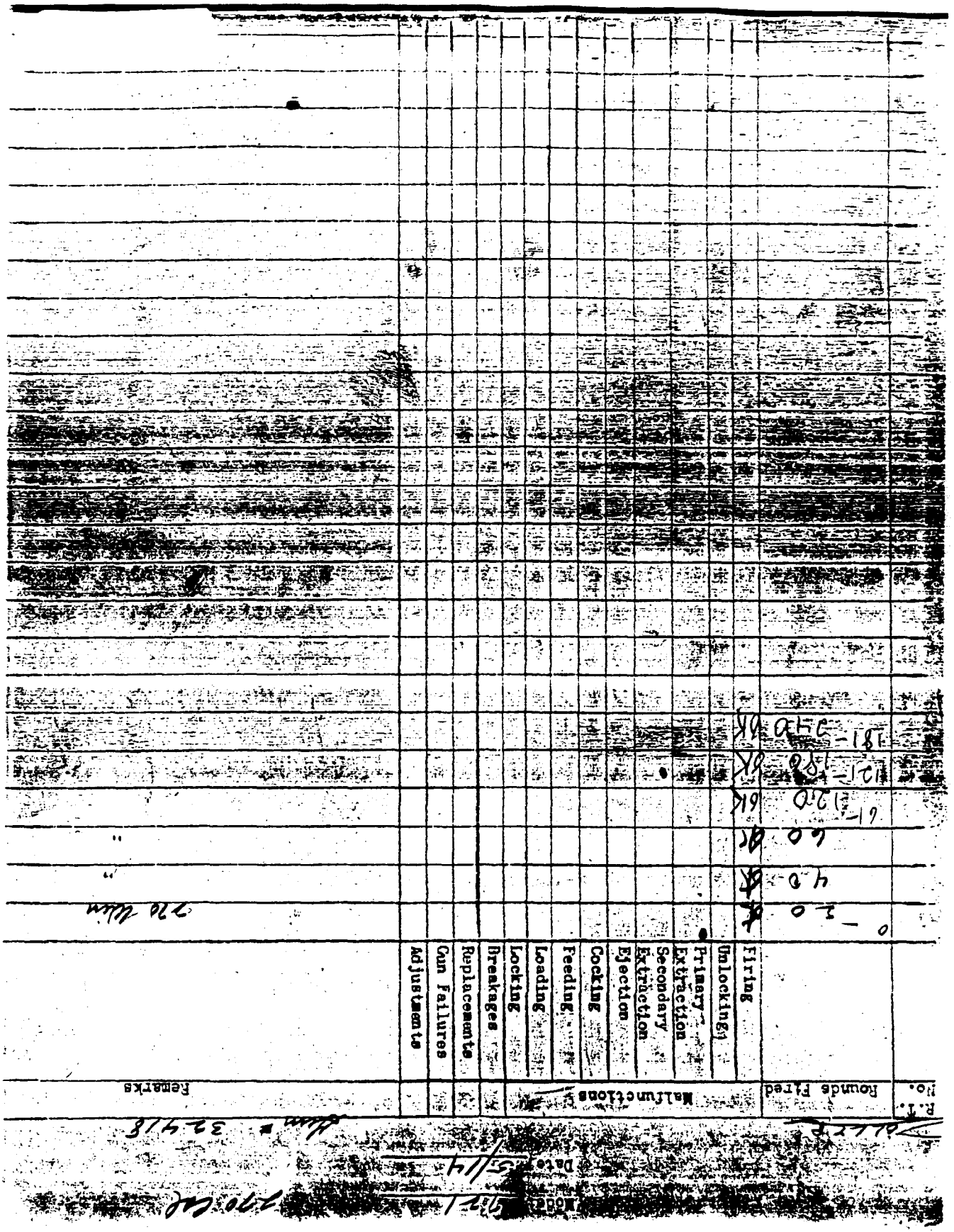

M/T21 - .270 WIN PILOT LINE TEST



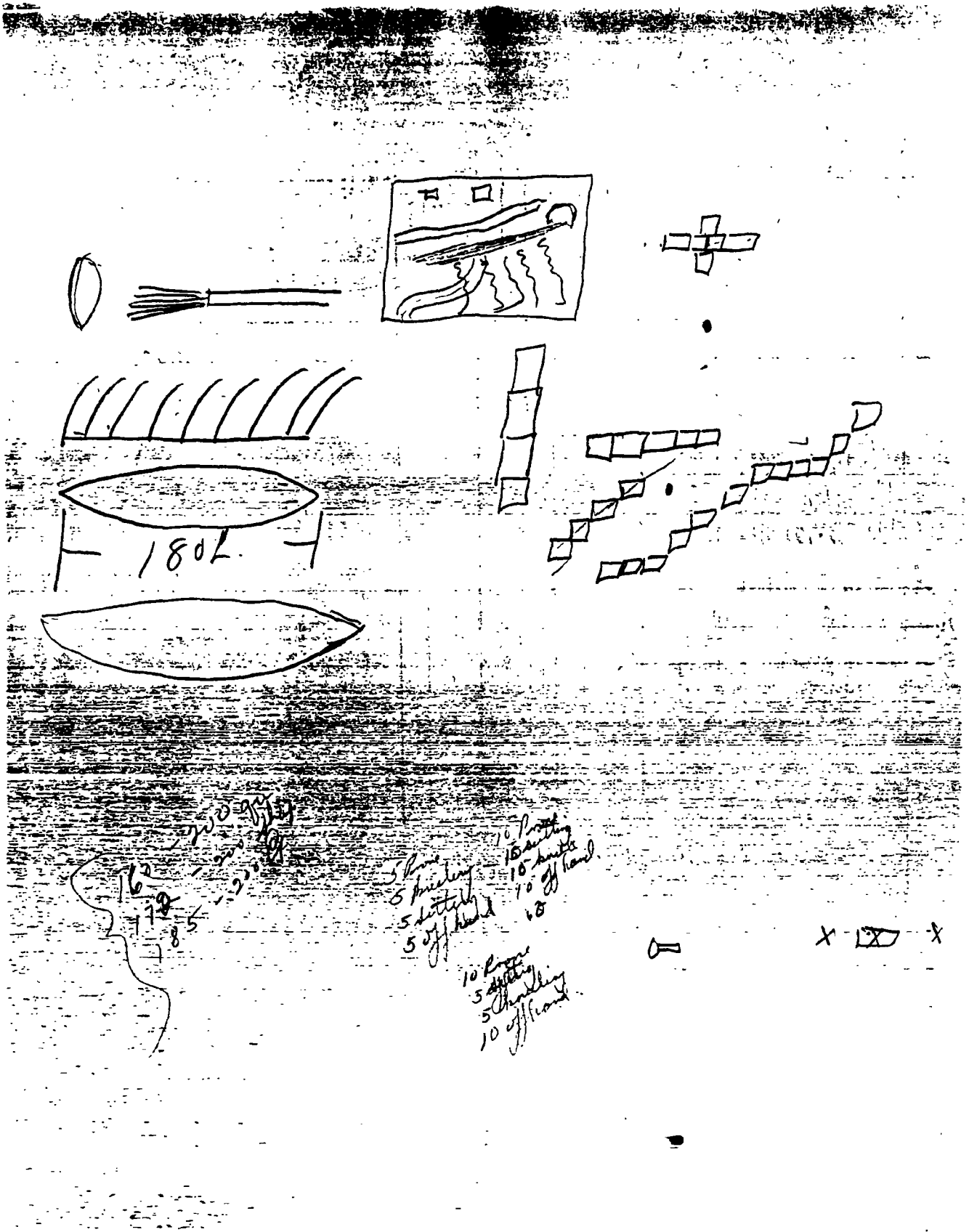




R. T. No.	Rounds Fired	Malfunctions													Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakage	Replacements	Gun Failures	Adjustments	
	20	OK													270 Win
	40	OK													
	60	OK													
	20	OK													
	80	OK													
	30	OK													



R.F. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks


180L

Gun #2 Model 721 270 Win

Date 10-14-48 Gun #35826

R.T. No.	Rounds Fired	Malfunctions														Remarks
	0	Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		Win Ammo
	0-60	OK														
	61-120	OK														
	121-180	OK														
	181-240	OK														

Gun ... Model 721 .270 Win
Date 5-14-48
Gun # 32568

R.T. No.	Rounds Fired	Malfunctions													Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	
	0														Win Ammo
	0 – 60	1													Hang-fire (Faulty Ammo)
	61 – 120	OK													
	121 – 180	OK													
	181 – 240	OK													

Model 721 .270 Win.

Date 5-14-48

Gun # 32437

R.T. No.	Rounds Fired	Malfunctions											Replacements	Gun Failures	Adjustments	Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages					
	0 - 30	OK														.270 Winchester
	30	OK														"
31 -	40	OK														"
	60	OK														"
61 -	120	OK														
121 -	180	OK														
181 -	240	OK														

2 Shot

Model 72 — 270 Win

Date 5-14-48

Fuller — Gun 32480

R.T. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks
	0 - 20	OK													.270 Winchester
	21 - 30	OK													"
	40	OK													"
	60	OK													"
	61 - 120	OK													
	121 - 180	OK													
	181 - 240			11											fail to extract S.M
				11											" " " S.M
						1									fail to eject F

Model 721 270 Win

Date 5-14-48

Gun # 35816

R.T. No.	Rounds Fired	Malfunctions										Replacements	Gun Failures	Adjustments	Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages				
	0														Win Ammo
	0-60							11							overrides 2nd Shell
								11							" " "
								11							" " "
								1							" " "
	61-120							11							" " "
	121-180	OK													
	181-240	OK													
															Bad Mag

Object #-2 Model [redacted]721 270 Win.
Date 5-14-48 Gun # 32487

R.T. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks
	0														Win. Ammo
0-	60					1									fail to eject S
						11									" " " SS
				11	1	/									" " extract MS
				11											fail to extract SF
				11											" " " SM
				1											" " " S
													1		Gun failure 4 mal in 2 rds
61-	120	OK													
121-	180			1											fail to extract F
181	240			11	11										" " " SMM
				9 rds						1 lock					lock to

cc: H.E. Faulkner
H.J. Shipman
E.H. Gross
H.A. Brom-File

Wayne

May 19, 1948

TO: W. E. Davis

FROM: S. M. Alvis

SUBJECT: MODEL 721 - CAL. 270 PILOT LINE TESTING

The following results of pilot testing of Cal. 270 is for your information and guidance in advance of the formal report which will be issued as soon as accuracy testing has been completed.

Eight (8) guns were selected at random and given a functional test of 240 rounds each; 5 were found to be S.A., and one rifle, #32489, had 4 primary extraction malfunctions and one failure to eject in 240 hds. for a performance of 2%.

Gun #32516 had 4 bolt overrides and these always occurred with the second cartridge from top out of a full loaded magazine. Examination of the gun showed that one side of the magazine at the lips is badly deformed and we believe is responsible for this difficulty. We have not as yet altered this gun in order that your people can inspect it.

In rifle #32487 there were 14 malfunctions and gun failure due to a total of 4 malfunctions in 20 rounds; 9 of these were for primary extraction, 2 on secondary extraction, 3 on ejection. Examination of the Bolt Assembly indicated that the Extractor was bent and probably responsible for the difficulty. We have installed a new Extractor and are requesting the Test Unit to re-check the gun and determine if this corrects the trouble.

Will advise as to results.

S. M. Alvis,
Ilion Technical Division

SMA:LJ

Model _____

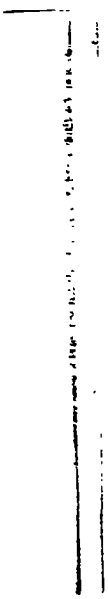
Date _____

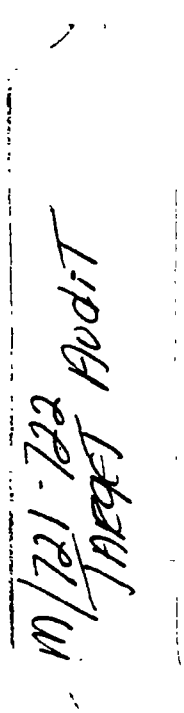
No.	Rounds Fired	Malfunctions												Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Adjustments	

Air Gauge Grooves

Gun # 32437	#35821	#32480	# 32418
0" - .2779	0" - .2786	0" - .2778	0" - .2775
1" - .2789	1" - .2789	1" - .2786	1" - .2787
2" - .2789	2" - .2788	2" - .2786	2" - .2786
3" - .2789	3" - .2788	3" - .2785	3" - .2785
4" - .2786	4" - .2785	4" - .2784	4" - .2784
5" - .2784	5" - .2784	5" - .2783	5" - .2784
6" - .2784	6" - .2784	6" - .2783	6" - .2784
7" - .2784	7" - .2784	7" - .2782	7" - .2784
8" - .2784	8" - .2783	8" - .2782	8" - .2784
9" - .2784	9" - .2783	9" - .2783	9" - .2783
10" - .2784	10" - .2783	10" - .2783	10" - .2783
11" - .2784	11" - .2783	11" - .2783	11" - .2783
12" - .2784	12" - .2782	12" - .2783	12" - .2783
13" - .2784	13" - .2781	13" - .2783	13" - .2782
14" - .2784	14" - .2781	14" - .2783	14" - .2782
15" - .2784	15" - .2781	15" - .2783	15" - .2782
16" - .2783	16" - .2781	16" - .2783	16" - .2782
17" - .2783	17" - .2780	17" - .2782	17" - .2782
18" - .2783	18" - .2780	18" - .2782	18" - .2782
19" - .2783	19" - .2780	19" - .2782	19" - .2781
20" - .2782	20" - .2782	20" - .2782	20" - .2781
21" - .2780	21" - .2781	21" - .2781	21" - .2781

Bore - Min Plug Plug Gauge Go	Plug Gauge Go	Plug Gauge Go	Plug Gauge Go
.270	.2695	.2695	.269




11/721-722
Target Audit

CC: J. C. Albrechtsen
S. W. Fisher
A. D. Gordon
H. J. Hackman
W. E. Leek
W. B. Parsons

September 30th, 1949

TO: D. Chambers

FROM: W. A. Best

SUBJECT: COMPETITIVE AMMUNITION

Please arrange to maintain in Stores the following competitive ammunition. This is to be kept current by reordering each 6 months and issuing to gallery upon receipt of new lot of all old competitive stores.

	12 Ga.	16 Ga.	20 Ga.	28 Ga.	.410 Ga.
Western Heavy	1000	1000	1000	500	500
Winchester Heavy	1000	1000	1000	500	500
Western Light	1000	1000	1000	500	500
Winchester Light	1000	1000	1000	500	500

	22 S Gallery	22 S H.S.	22 L.R. Reg.	22 L.R. H.S.
Western	10,000	10,000	10,000	10,000
Winchester	10,000	10,000	10,000	10,000

	300 H&H	30-06	300 Sav.	35	32	30	270	257
Western	1000	1000	1000	1000	1000	1000	1000	1000
Winchester	1000	1000	1000	1000	1000	1000	1000	1000

W. A. Best
Chief Supv. Prod. Insp.

WAB:TP

CC: E. K. Wheat

October 3, 1944

TO: W. A. Best (2)
S. E. Fisher (2)

FROM: P. H. Eccleston

SUBJECT: CENTER FIRE ACCURACY - QUALITY LEVEL TEST

The following test has been designed to ascertain the present quality level of the M/721-722 Rifle with respect to grouping characteristics. Every effort should be made to conduct the test in a normal manner so that actual production conditions are reflected.

1. Scope of test

   a. 30/06 and 270 calibers only to be recorded.

   b. Only guns shot from accuracy device to be considered.

2. Ammunition

   a. Standard range ammunition.

3. Recording

   a. Seating shots to be disregarded.

   b. Extreme spread of the shots affecting the decision to pass or reject the gun to be tallied on sheets provided.

   c. Separate sheet to be used for each caliber.

P. H. Eccleston

P. H. Eccleston
Arms Technical Division

PHE/el

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

5/5 3½

4/5 3

3/5 2½

five 3 shots ok: if 2½ x

4 " 3 "

5 " 2½

5 groups 3-3sh... Ave. 1½

4- — 2½

5- — 3½

Compact ratio

Use Spec Lod 30 06

Device -

GUN No	Extreme Spread (Device) E.S. 5/5	E.S. 4/5	E.S. 3/5	Extreme Spread (Shoulder) E.S. 5/5	E.S. 4/5	E.S. 3/5
85268	4.2	3.05	2.2	4.9	3.1	2.2
	2.9	1.9	1.0	3.9	3.5	1.7
	3.2	1.7	1.0	4.1	2.0	.3
	5)10.3	6.65	4.2	16.9	8.6	4.2
83989	2.4	2.3	1.4	1.8	1.3	1.2
	4.0	2.8	1.2	2.9	1.3	.9
	2.7	1.3	.9	2.8	1.8	.8
	9.1	6.4	3.5	7.4	4.4	2.9
83057	2.75	.9	.2	2.0	1.4	.7
	4.1	2.5	.75	2.5	1.5	.8
	2.3	1.8	.6	2.5	2.0	1.4
	9.15	5.2	1.65	7.0	4.9	2.9
87391	4.1	2.2	1.4			
	2.5	1.7	1.5			
	2.0	1.8	1.7			
	8.6	6.7	4.6			
84800	3.8	3.1	1.6			
	3.5	1.7	1.2			
	2.8	2.5	1.9			
	10.1	7.3	4.7			
83387	5.15	4.6	2.2			
	4.15	1.9	1.55			
	3.30	1.4	.9			
	13.60	7.9	4.65			
X	3.36	2.2	1.3	3.5	1.94	1.12

9/29/94
30/06 Cal
Ry Arms
Quality Audit

9/12/49 30/06 cal. M1721 Quality Audit

TEST No I

Gun No.	Device EV	Device EH	Device ES	Device MR	Shoulder EV	Shoulder EH	Shoulder ES	Shoulder MR	PI
# 85268	2.9	4.2	4.2	1.5	1.3	3.9	3.9	1.6	3.9 Lc 1.6 Hc
	2.4	1.4	2.9	.8	4.7	1.7	4.9	1.7	4.6 Lc 1.8 Hc
	2.2	2.1	3.2	1.0	2.5	3.2	4.1	1.5	5.1 Lc 1.2 Hc
	2.5	2.6	3.43	1.1	2.8	2.9	4.3	1.6	
# 83989	2.4	2.1	2.4	1.17	1.8	2.0	2.8	.88	3.4 Lc .7 Hc
	3.8	1.0	4.0	1.3	1.4	1.8	1.8	.84	4.1 Lc .35 Lc
	.8	2.7	2.7	.8	2.6	1.8	2.9	.9	5.9 Lc .6 Lc
	2.3	1.9	3.03	1.09	1.9	1.8	2.5	.87	
# 83057	2.6	1.7	2.75	.64	1.4	2.0	2.0	.7	2.6 Lc 1.1 Hc
	3.85	1.8	4.1	1.6	.8	2.5	2.5	.84	1.4 Lc .4 Hc
	1.8	2.45	2.3	.86	2.1	1.9	2.5	1.08	2.1 Lc .6 Hc
	2.75	1.55	3.05	1.03	1.4	2.1	2.3	.87	

Check with Bill [illegible] on 4/5 & 2/5

721 & 722 GROUP TEST #2 9-22-79

MODEL	GUN NUMBER	CAL.	E.V.	E.H.	E.S.	M.R.	
721	87391	30-06	3.2	3.7	4.1 X	1.38	
			1.45	2.75	2.50	1.13	
			2.	1.55	2.05	.90	
721	84800	30-06	3.75	1.25	3.80 X	1.77	
			1.60	3.90	3.50 X	1.15	
			2.45	2.05	2.80	1.23	
721	83387	30-06	5.10	1.90	5.15 X	1.99	
			3.80	3.00	4.15 X	1.20	
			.80	3.25	3.30	1.02	
					3.34		
					31.50		

Mi 2.05 5.15 Diff = 3.1

E.S. MAX 3 1/2"

E.V. = EXTREME VERTICAL
E.H. = " HORIZONTAL
E.S. = " SPREAD
M.R. = MEAN RADIUS

RD-3545

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT DUPONT COMPUTATION SHEET SHEET NO. 1

TITLE OF PROJ. TARGET - QUALITY AUDIT 17/721-22 PROJ. NO.

SUBJECT GROUPS - 5 SHOT (1) / GUN - REGULAR AUDIT GUNS WORKS

EXTREME SPREAD COMPUTER E. R. Ethart DATE 6-6- 1950

DATE	30-06	300 SAV	300 MAG.	270	257	222	GUN #
6-7-50		3.1		2.2			
		2.5		2.9			
6-8				3.4			
				.8			
				2.1			
	R W			4.7 X	3.4	3.6	
6/9	3.5 1.8			RT -13 6/14			
	2.9 1.4						
	3.6 1.7						
	2.3 2.4						
6/12						3.0 - 2.4	
						1.8	
						1.4	
						1.8	
				3.6			
6/13				3.3	↓		
				4.0	5" below		
				3.7	"		
				↑			
				T RT			
6/14				4.0 - 1.5			
				3.7 - 2.3			
				~~4.9 - 1.3~~			
				3.6 - 1.9			
6/15					1.9		
					1.4		
					2.0		
		1.9					
6/16				2.3			
				2.9			
				4.7 - 3.2			
				3.0			

Quality Audit - Gun # 124578

Non Grouper. 300 Mag.

Bore Diam		Groove Diam	
muzzle -	3011	muzzle -	.3090
to 3"	3011	1"	.3089
4"	3009	5"	.3086
5"	3007	10"	.3084
10"	3004	15"	.3084
15"	3005	20"	.3084
17"	3007		
20"	3006		
21"	3007		
Variation - .0007		Variation .0006	

Were finished with Hoppes before air jagged -

Carlson
28 June 50.

AO 1883

270 ✓

ITEM: Quality Audit Guns OPERATION: Target

DIMENSION: Extreme Spread MACHINE NO: Accuracy Device

DATE SAMPLED: NUMBER SAMPLED: COMP. BY: E

Class Interval	Number Found Within Each Interval.	f	d	fd	$f(d)^2$
0			0		
½			1		
1	IIII	4	2	8	16
1½	III	3	3	9	27
2	IIII	6	4	24	96
2½	IIII	4	5	20	100
3	IIIII	9	6	48	288
3½	IIIIII	8	7	56	392
4	II	2	8	16	128
4½	II	2	9	18	162
5			10		
5½					
6					
6½					
7					
7½					
8					
		N=37		+199 −0	1209
				Σfd=	$\Sigma f(d)^2$

ci = Class Interval
f = Total Number Within a Class Interval
d = Deviation in Class Units from Selected Origin
N = Total Number Sampled

$\bar{X}$= σ=

$\bar{X} = \text{Origin} \pm \frac{\Sigma fd}{N}(ci)$

Origin=

$\frac{\Sigma fd}{N} = \frac{199}{37} = 5.37$

ci= .5

$\frac{\Sigma fd}{N}(ci) = 2.68$

$\bar{X} = 2.68$

$\sigma = ci\sqrt{\frac{\Sigma f(d)^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2}$

$\frac{\Sigma f(d)^2}{N} = \frac{1209}{37} = 32.67$

$-\left(\frac{\Sigma fd}{N}\right)^2 = -(\quad)^2 = 28.83$

D= 3.84

$\sqrt{D}$= 1.96

ci= .5

$\sigma = ci\sqrt{D}$ = .98

$N\sigma^2$=

Aug 22, 1958

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126283

G-88-REM

DON'T SAY IT—WRITE IT

To _____ Date _____

From _____

Quality Audit Gun # 124548 — 300 Mag

Non grouping — Variation .0006 .3011-.3005

Re loaded — reduced variation by .0003

Shoulder shot by gauge \ 2.6 was (3.7-3.9)

Returned to Quality Audit

PLAN FOR YOUR SAFETY BEFORE YOU START THE JOB

BARBER - PRESALE R 0126283
R2527271

cc: W. A. Bush
B. W. Fisher
E. J. Robinson
E. Sapp
V. J. Smith
M. H. Walker
E. L. Wood

June 6th, 1950

TO: W. Scanlon
G. Urbe

FROM: A. D. Gordon

SUBJECT: M/721-722 TARGET TEST

Confirming our conversation of June 2nd, effective as of June 5th please set up the following procedure for targeting M/721-722 rifles in order to gather data on accuracy:

1. All regular audit guns to be included (to be shot by Gallery men).
2. Two warner shots in dark - run up another target.
3. Shoot one 5-shot group.
4. Secure target.
5. Record gun number and caliber on target.
6. Turn all targets into Quality Control office.

A. D. Gordon, Engrg.
Quality Control

ADG:VF

CC: R. K. Wheat

October 5, 1949

TO: W. A. Best (2)
S. W. Fisher (2)

FROM: P. H. Eccleston

SUBJECT: SHOOTER VARIATION TEST

In December 1948, a test was made to determine the individual characteristics of targeters with respect to point-of-impact. It was found that a wide variation in point-of-impact existed between targeters when shooting the same gun. As a result of this information an individual specification for point-of-impact was established for each targeter.

Since it is quite possible that targeters may optically vary from time-to-time, it appears advisable to recheck on the individual characteristics and re-establish specifications accordingly. The following test is designed for this purpose.

Scope of Test

1. All high power rifle targeters and bore sighters to participate in test.

2. Gun #721 - 30/06 Cal.
3. Gun #722 - .257 Cal.

4. Test to be extended over 5 days

Procedure

1. Select test guns (good groupers).

2. Use standard range ammunition.

SUBJECT: SHOOTER VARIATION TEST

Procedure (cont'd)

3. Clean and wire brush guns before each target.

4. Shoot one warmer shot off target.

5. Each shooter to shoot one 5 shot target each gun at the beginning and end of the shift.

6. Targets to be retained and identified as to date, beginning or end of shift, caliber and shooter.

P. H. Eccleston
Arms Technical Division

PHE/ml

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

FD-721

BOLT ACTION HIGH POWER CENTER FIRE RIFLE

BARBER - PRESALE R 0126288

~~J.A. Roberts~~
R&M Control - Ilion

File

R D 1386-REV.

REMINGTON ARMS COMPANY, INC.

APPROPRIATION REQUEST

Department Technical Works Ilion Project No. FD-721 Part III

Request for $ 17,170. Reduction Date 4/13/48

Category Established Product

Title MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

Parts I & II - Previously Authorized - $1,113,170.
Part III - This Request - (17,170.) Reduction
$1,096,000.

This project is included in Forecast No. 2 in the amount of $79,790.

To be commenced Upon Approval

To be ready for use

To be physically completed Sept. 1948

Estimate prepared by

K. C. Gilmore 4/12/48 Date

		Date
Approved ~~or Authorized~~	H. A. Brown	4-14-48
Approved ~~or Authorized~~	H. K. Faulkner	4-14-48
	J. M. Christman	4-16-48
Approved ~~or Authorized~~	G. O. Clifford	4-18-48
	R. H. Coleman	4-20-48
Approved ~~or Authorized~~	W.F.H.Mattlage	4-20-48
	M. R. Warden	4-20-48
Approved ~~or Authorized~~	C. K. Davis, President and General Manager	4-22-48
Authorized	BOARD OF DIRECTORS	4-30-48

Approved as to form, accounting aspects, and rules compliance

R. D. Jack, Treasurer or Assistant Treasurer 4-20-48 Date

R.D. Jack, Secretary

Preliminary approvals:

	Date		Date

ml
4/13/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126288

RT-154

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD-721 - Ilion WORKS

	Labor	Material	Total
Land	$ -------	$ -------	$ ---------
Manufacturing buildings	-------	-------	---------
Manufacturing equipment	-------	401,527	401,527
Power and service facilities	-------	-------	---------
Tooling	94,075	198,800	292,875
Dismantling and rearranging	-------	-------	---------
Product development	401,598	-------	401,598
Machine development	-------	-------	---------
Project administration	-------	-------	---------
Other	-------	-------	---------
	$ 495,673	$ 600,327	$ 1,096,000
Provision for advancing wages and material prices	-------	-------	---------
TOTAL	$ 495,673	$ 600,327	$ 1,096,000

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	Expenditures Previous Parts	Expenditures This Part	Adjusting Entries	Final Net Results in Accounts
Plant increase	$ 701,402	$(7,000)Red.	*$(2,935.48)	$ 691,466.52
Operations	411,768	(10,170)Red.	--------	401,598.00
Depreciation	-------	------	* 2,935.48	2,935.48
	$ 1,113,170	$(17,170)Red.		$1,096,000.00

*Write off of five worn obsolete type of machines used for cutter sharpening. (See schedule in Project FI-172)

ml
4/13/48

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

GENERAL INFORMATION

PROJECT NO. FD-721 Part III - Ilion Works

INTRODUCTION:

Part II of this project authorized funds in the total amount of $1,113,170 to complete all work required to place Model 721-722 Rifles in production in eight calibers, including three new Remington calibers as follows:

280 Remington
224 Remington
222 Remington

A review of the program involved in adding these three new Remington cartridges to the ammunition line and providing Model 721 and 722 Rifles to handle them indicated insufficient economic justification for calibers 280 Remington and 224 Remington. Deletion of these two calibers was recommended in a combined meeting of the Arms and Ammunition Product Committees on March 26, 1948.

DESCRIPTION OF PROPOSED WORK:

In conformance with this decision, all work on the development of Model 721 for caliber 280 Remington and Model 722 for caliber 224 Remington has been stopped. Development of Model 722 for caliber 222 Remington, however, will be completed for production.

REMARKS:

A revision in Estimated Earnings and Return on Investment is attached. Net Earnings of $140,736 are estimated with a return of 11.7%.

The R & M Estimate approved April 1, 1948, included the $1,113,700 authorized in Part II and this project therefore anticipates an underrun of $17,170.

ml
4/15/48

Revised 4-16-48
WEG:hsk

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT

Project No. FD-721 Part III - Ilion Works
6 Cal.

CATEGORY: ESTABLISHED PRODUCT

	Normal Year		
	Operation before Project No. FD-721	Operation after Project No. FD-721	Results from Project No. FD-721
Quantity	262,010	274,810	12,800
Outside Sales	$6,229,197	$6,618,387	$ 389,190
Less: Mill cost	$4,962,070	$5,107,982	$ (145,912)
Selling and administrative expense	661,839	661,839	-------
	$5,623,909	$5,769,821	$ (145,912)
Operative Earnings	$ 605,288	$ 848,566	$ 243,278
Less: All other expense @ 11% (excludes Federal taxes on income)			26,761
Net earnings before Federal taxes on income			$ 216,517
Less: Federal taxes on income @ 35%			75,781
NET EARNINGS			$ 140,736
INVESTMENT			
Total appropriation request under this project (including development)			$1,096,000
Less: Amount included therein for manufacturing facilities subject to allocation:			
Equipment	$ 401,527		
Tooling	292,875		694,402
			$ 401,598
Add: Investment in facilities used directly in this operation and applicable service and other manufacturing facilities			819,341
Total investment			$1,220,939
Working capital			386,724
Total capital required			$1,607,663
Less: Portion of this project to be charged to operations (including development) or depreciation reserve			401,598
Total investment after completion of this project			$1,206,065
RETURN ON INVESTMENT			
Total capital required			8.8%
Total investment after completion of this project			11.7%

ml
4/15/48

REMINGTON ARMS COMPANY, INC.

ESTIMATE OF SAVINGS
Present Model vs. Proposed Model

BASED ON NORMAL YEAR

PROJECT NO. FD-721 Part III - Ilion WORKS
6 Cal.

	Total Line Including Present Model	Proposed Model	Difference
Quantity	262,010	274,810	12,800
Outside Sales	$6,229,197	$6,618,387	$ 389,190
Factory costs:			
Direct Material	836,874	919,266	(82,392)
Direct Labor	822,043	864,807	(42,764)
Expense:			
Direct and Indirect	2,790,632	2,797,303	(6,671)
Fixed	250,000	250,000	
Inventory adjustment	93,991	96,628	(2,637)
Deferred tooling cost	168,530	179,978	(11,448)
Total factory cost	$4,962,070	$5,107,982	$(145,912)
Selling and administrative expense	661,839	661,839	-------
	$5,623,909	$5,769,821	$(145,912)
Operative earnings	$ 605,288	$ 848,566	$ 243,278
Less: All other expense @ 11%			26,761
Estimated savings before Federal taxes on income			$ 216,517
Less: Federal taxes on income @ 35%			75,781
Estimated net savings (normal year)			$ 140,736
Total estimated expenditure, excluding $250,000 of equipment for other models			$ 846,000
Net return on expenditure			16.6%
Total estimated expenditure, excluding $401,527 of equipment*			$ 694,473
Net return on expenditure			20.3%

*Equipment for general use which would have to be purchased on a necessity basis at a reasonably early date.

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4/14/48

REMINGTON ARMS COMPANY, INC.

DETAIL ESTIMATE OF EXPENDITURES
M/721-722 - Project FD-721 - Part III

	Amount Previously Authorized	Amount Requested This Part	Added Cost To Complete	Total Estimated Cost
DEVELOPMENT (FD-721-1)				
Design				
Investigation	$ 1,061	$--------	$-------	$ 1,061
Design	15,616	--------	-------	15,616
Design Revisions	33,053	(1,003)	-------	32,050
Model Making	18,080	-----	-------	18,080
	$ 67,810	$ (1,003)	$-------	$ 66,807
Specifications				
Testing	$ 20,687	$ (1,000)	$-------	$ 19,687
Specifications	8,213	-----	-------	8,213
	$ 28,900	$ (1,000)	$-------	$ 27,900
Product Engineering				
Process Engineering	$ 94,700	$ (1,500)	$-------	$ 93,200
Trial Run	29,950	(1,000)	-------	28,950
	$ 124,650	$ (2,500)	$-------	$ 122,150
Tooling Revisions				
Tool Design Revisions	$ 35,400	$ -----	$-------	$ 35,400
Tool Revisions	46,935	(935)	-------	46,000
	$ 82,335	$ (935)	$-------	$ 81,400
Administrative				
Engineering Files	$ 6,219	$ (851)	$-------	$ 5,368
Project Engineering	15,381	(1,381)	-------	14,000
	$ 21,600	$ (2,232)	$-------	$ 19,368
TOOLING (FD-721-2)				
Design	$ 96,075	$ (3,000)	$-------	$ 93,075
Tools	203,800	(4,000)	-------	199,800
	$ 299,875	$ (7,000)	$-------	$ 292,875
SPECIAL MACHINERY (FD-721-3)	-------	-----	-------	-------
STANDARD MACHINERY (FD-721-4)	374,527	$ -----	$-------	$ 374,527
PRODUCTION AIDS (FD-721-5)	$ 27,000	$ -----	$-------	$ 27,000
PILOT OPERATIONS (FD-721-6)				
Quality Audit	$ 3,230	$ -----	$-------	$ 3,230
Methods Engineering	1,460	-----	-------	1,460
Machine Changes&Additions	10,060	(3,500)	-------	6,560
Machine Rearrangement	1,900	-----	-------	1,900
Pilot Lot Manufacture	61,823	2,000	-------	63,823
Tool Replacement	8,000	(1,000)	-------	7,000
Credit for O.K. Guns	------	-----	-------	------
	$ 86,473	$ (2,500)	$-------	$ 83,973
SUB TOTAL	$ 411,768	$(10,170)	$-------	$ 401,598
CONTINGENCIES	-------	------	-------	-------
TOTAL	$1,113,170	$(17,170)	$-------	$1,096,000

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4/13/48

TECHNICAL DEPARTMENT PROJECT - FINANCIAL CLOSING NOTICE

RECEIVED MAR 17 1950 TECHNICAL DEPT.

PLANT - Ilion PROJECT - FD-721

DIVISION - Arms CLOSING DATE - February 21, 1950

TITLE - Model 721-722 Bolt Action High Power Center Fire Rifles

All work on the subject project having been completed, the project is to be closed out in its entirety.

Preliminary Approvals

D Nelson	Technical Dept. Manager
A Hudson	Engrg. Service Division Supvr.
Geo Cadday	Works Accountant
H K Faulkner	Plant Manager

Approvals

J M Calhoun	Technical Director
S N Hoffman	Treasurer or Asst. Treasurer
W H Wigglesworth	Director of Production
M Rivardi	Vice President and Assistant General Manager

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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SUMMARY OF EXPENDITURES
PROJECT FD-721

	Expended	Authorized	(OverRun) Underrun
Manufacturing Equipment	398,851 39	401 527 00	2 675 61
Tooling	293,983 90	292 875 00	(1 108 90)
Dismantling & Rearrangement	947.79		(947 79)
Product Development	379,307.17	401,598.00	22,290.83
Other	615.96	-	(615.96)
	1,073,706.21	1,096,000.00	22,293.79
	UnderRun		2.0%

	Account	Authorized	Expended	UnderRun
721-1 Development	Operations	317,625.00	297,823.74	19,801.26
721-2 Tooling	Pl.Incr.*	292,875.00	293,983.90	(1,108.90)
721-4 Standard Machinery	Pl.Incr.*	374,527.00	373,742.56	784.44
	Depreciation		3.85	(3.85)
721-5 Production Aids	Pl.Incr.*	27,000.00	25,108.83	1,891.17
	Depreciation		943.94	(943.94)
	Operations		615.96	(615.96)
721-6 Pilot Operations	Operations	83,973.00	81,483.43	2,489.57
		1,096,000.00	1,073,706.21	22,293.79
				2.0%

*Detail attached.

Cutter Grinder #10956 written off on PIT-RI-461
Cutter Grinder # 8608 written off on PIT-RI-661
Bench Lathes #2266 & #2873 and attachments are required for present volume of production.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DETAIL OF EXPENDITURES
PROJECT FD-721

	Expended	Authorized	(OverRun) UnderRun
Development			
Design (1)			
Investigation	551.11	1,061.00	509.89
Design	15,143.13	15,616.00	472.87
Design Revisions	33,098.07	32,050.00	(1,048.07)
Model Making	19,326.69	18,080.00	(1,246.69)
	68,119.00	66,807.00	(1,312.00)
Specifications			
Testing	19,785.11	19,687.00	(98.11)
Specifications	9,516.96	8,213.00	(1,303 96)
	29,302 07	27,900 00	(1,402.07)
Product Engineering			
Process Engineering	87,326.86	93,200.00	5,873.14
Trial Run	24,382.26	28,950.00	4,567.74
	111,709.12	122,150.00	10,440.88
Tooling Revisions			
Tool Design Revisions	33,864.43	35,400.00	1,535.57
Tool Revisions	36,953.40	46,000.00	9,046.60
	70,817 83	81 400 00	10 582 17
Administrative			
Engineering Files	5,367 79	5 368 00	21
Project Engineering	12,507.93	14,000 00	1,492 07
	17,875.72	19,368 00	1,492 28
Tooling (2)			
Design	89,110.39	93,075.00	3,964.61
Tools	204,873.51	199,800.00	(5,073.51)
	293,983.90	292,875.00	(1,108.90)
Special Machinery (3)	-	-	-
Standard Machinery (4)	373,746.41	374,527.00	780.59
Production Aids (5)	26,668.73	27,000.00	331.27
Pilot Operations (6)			
Quality Audit	2,829.81	3,230.00	400.19
Methods Engineering	1,210.27	1,460.00	249.73
Mach.Changes & Additions	5,083 58	6,560.00	476.42
Mach. Rearrangement	2,189 37	1,900 00	(289 37)
Pilot Lot Mfg.	64,740 68	63 823 00	(917 68)
Tool Replacement	4,795.07	7 000 00	2 204 93
Credit for OK Guns	(275 35)	-	275 35
	31,483 43	83 073 00	2,439 57
Sub Total (1-6)	379,307 17	401 598 00	22,290.83
Total	1,073.706.21	1,096,000.00	22,293.79

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721

721-2 Tooling

Design	$ 89,110.39	$
Tools	204,873.51	293,983.90

721-4 Standard Machinery

Inv.No.	W.O.No.	Description	
12184	80704	Dennison Press	1,169.49
11869	80705	Drill Sharpener	1,450.85
12413		Install.Charges	85.84
12366	80707	Lathe	1,768.45
12367		Motor	35.00
11875	80710	J&L Lathe	8,032.14
11890 &)		Motors	290.00
12376)			
22024	80712	Lathe	2,763.52
11884	80714	Cincinnati Grinder	3,601.75
12150 &)		Motors	105.00
12151)			
12401	80716	LaPointe Broach	5,334.69
12438		Motor	130.00
12193	80717	Porter Cable Sander	1,301.97
12418		Motor	78.06
11878	80719	Landis Grinder	6,454.25
11996 &)		Motors	170.00
11997)			
12302	80725	Sellers Grinder	457.75
11877	80726	Lipe Lathe	2,904.06
11995		Motor	110.00
12369	80727	Lipe Lathe	3,206.96
12373		Motor	112.00
12370	80728	Lipe Lathe	2,861.68
12374		Motor	112.00
12371	80729	Lipe Lathe	2,818.03
12375		Motor	112.00
12446	80733	Cincinnati Miller	3,006.48
12445	80734	Cincinnati Miller	2,777.66
22013		Motor	25.00
12379	80735	Cincinnati Miller	5,622.91
12386 &)		Motors	96.06
22007)			
12404	80736	Thread Miller	4,627.38
12423		Motor	35.00
12308	80737	Delta Motor	27.60
12307	80738	Delta Drill Press	73.80
12320	80739	Dip Tank	89.10
12380	80741	Cincinnati Miller	3,783.20
12387		Motor	64.08
11876	80744	Screw Machine	5,444.79
12302	80745	Sellers Gr.Cabinet	76.09
12382	80763	Screw Machine	13,171.82
12419		Motor	293.00
12439	80900	LaPointe Broach	5,760.63
12440		Motor	220.00

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721
-2-

721-4 Standard Machinery Continued

Inv.No.	W.O.No.	Description	
12378	80901	Cincinnati Miller	6,471.73
12385		Motor	82.72
12402	80902	Cincinnati Miller	2,895.06
12462	81409	Base for Tocco Brazer	333.01
12479	81502	Cincinnati Miller	5,360.03
12480 & 12481		Motors	75.00
11876	81508	Pulley Shafts for Screw Machine	32.70
12342	81511	Modern Bond Shavers	217.38
12343		(2)	217.39
12368 & 12372		Motors	30.00
			30.00
6235-6-7-8	81516	Lyons Tool Toters	45.85
12470	81517	Cincinnati Profiler	15,706.29
12471-2-3-4	81517	Motors	170.00
12394	81519	Barnes Driller	40,365.04
22636-7-8-9-40 41-2-3-4-22703		Motors	1,886.60
22645		Motor	465.00
12396	81520	Barnes Reamer	41,052.53
22167-8-9-70		Motors	1,114.00
22174	81521	Kingsbury Miller	10,026.78
12384	81523	Lipe Lathe	1,889.01
12389		Motor	99.63
11878	81528	Parts for Landis	201.93
	81529	Grinder	1,405.03
12383	81532	Drill Press, 2 Spdl.	2,055.87
12415	81533	" " , 3 Spdl.	4,652.82
12414	81534	" " , 3 Spdl.	2,571.35
12476	81536	Cincinnati Miller	6,637.27
12477 & 12478		Motors	153.00
12441	81542	Chucking Machine	25,888.65
12442-3-4		Motors	358.00
12361	81544	Carboloy Grinder	1,430.35
12453	81545	LaPointe Broach	3,742.79
12454 & 12455		Motors	43.00
22037	81546	Surface Grinder	3,658.49
22079-80-81-82		Motors	335.00
12492	81549	Gorton Engraver	1,351.49

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721
-3-

721-4 Standard Machinery Continued

Inv.No.	W.O.No.	Description	
12489) 22093) 22334)	81557	Screw Machines	13,330.42
22335&6) 22094-5)		Motors	260.00
12381	81558	Cincinnati Grinder	33,613.88
12388) 12398) 12447-8) -9)		Motors	759.00
12484	81559	Marking Machine	3,155.87
23538	81560	Steel Shelving	220.12
11878	81575	Water Nozzle for Landis Grinder	38.91
22058	81577	Logan Assembly Machine	3,528.02
22059		Motor	90.00
12489) 22334) 22093) 22700)	81579	Attach. for Screw Machines	2,965.00
11876	81584	Parts for Screw Mach.	14.73
12382	81586	Feed Gears - Screw Machine	80.97
12371) 11877) 12369) 12370) 12371)	81587	Switches for Carbo Lathes (4)	357.13
12397	81593	Hoffman Filter	1,563.60
12398 &) 12399)		Motors	128.00
11875	81595	Concrete Pad for Lathe	665.58
12460	81596	Conversion of Dbl.End Countersinking Machine to 2 D/Ps #23929 & 23930	2,457.71
22015 &) 22017)		Motors	110.00
11878	81602	Grinder Parts	379.52
12414) 12415) 12383)	81603	Parts for Drill Presses	108 19
Various) Machines) 46-1)	81607 81608	Design Work " "	771 21 1,002.48
22047	81610	Final Assem Reamer	653 25
22523		Motor	20.00
11875	81612	Bar Feed	207 30
12453	81617	Inst.Broach	229.13
12182	81618	Inst.Comparator	71.88
12401	81628	Coolant Lines on Broach	36.71

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721
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721-4 Standard Machinery Continued

Inv.No.	W.O.No.	Description	
12389	81629	Parts for Motors	23.63
22563	81631	E-C Sander	394.63
12493	81632	Trolley	81.48
22711		Hoist	115.67
12379-80) 12445-6)	81637	Blow Guns on Cinn. Millers	46.40
12462	90220	Tocco Brazer	11,870.18
-	90252	Cuprodine System	1,949.68
-	90253	Cuprodine piping	1,215.29
12330) 22600-1-) 2-3-4) 22605	90254	Cuprodine Tanks	710.00
-		Cuprodine Piping	427.79
-	90257	Cuprodine Design	656.98
-	91201	Design - tempering	219.06
12382	91202	Oil Filter-Scr.Mach.	66.10
12453	91203	Magnetic Chuck	272.75
	91204	Arbor Support for Cincinnati Miller	80.64
22046	91205	Hoist Assembly	850.66
22607	91205	Hoist Assembly	209.00
12379-12402) 12378-12380) 12445-12446) 22025-12476) 12479-22029) 22632-22042)	91206	Trip dogs on 12 machines	103.93
23492	91208	Hot Oil Tempering Bath	127.84
22052	91209	Gorton Grinder	779.28
22053		Motor	25.00
22562	91210	Sellers Grinder	1,164.20
22583		Motor	80.00
22026	91211	Tap Grinder	600.41
23492	91212	6 Oil Heaters for Tempering Bath	120.83
12441	91213	Centering Device	600.78
22090	91214	Roto-Clone	266.41
22091		Motor	40.00
22034	91215	Sellers Grinder	335.10
22134		Motor	22.00
22355	91216	Hob Sharpener	3,934.38
22357-6		Motor	107.00
11875	91217	Slide Support	154.41
12396	91222	Install Reamer	1,367.42
12402	91223	Time Delay for Cincinnati Miller	265.00
12394) 12416) 22527)	91224	Engrg. Design and Layout for Barnes Drillers	721.18

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721
-5-

721-4 Standard Machinery Continued

Inv.No.	W.O.No.	Description		
22750	91225	Surface Grinder	1,699 58	
22038	92803	Router	1,140.78	
22618		Freq. Changer	374.86	
-	92806	Exhaust pipe for above	1.74	$ 373,742.56

721-5 Production Aids

23551) 23552)	81888	2 Barrel Racks	420.91
-	81256	Browning Racks (8)	1,249.55
12429	81566	Comparator	2,867.27
12408	90118	Comparator	3,232.48
-	90131	4 Assembly trays	47.87
-	90148	Benches 46-1	403.57
6243to6282	90149	Rack Conveyors (40)	3,342.57
-		400 Metal Trays	3,052.53
23537	90150	Rack for Steel	189.12
-	90151	35 Steel Trucks	332.10
-	90152	17 Steel Trucks	1,033.03
-	90153	50 Barrel Trucks	478.86
-	90154	Exhaust for Dip Tanks	76.87
-	90155	180 wood bottoms in barrel trays	681.73
-	90156	" " " " "	488.14
-	90159	120 Assembly Bins	65.93
-		80 " "	75.23
12405) 12406) &	90160 12407	Plast-O-Dip tanks	150.58 128.70
12461) 12409)	90162	Stanley Bench Grinders	46.06 46.06
19851	90163	Kardex File	145.06
19129-19067) -19153)	90164	Lyons Racks	314.61
6551-2-3	90165	Tool stands	67.98
-	90166	500 Stacking tote pans "B"	1,259.20
23540	90168	Gr. Wheel rack	104.35
23541-2-3-4) 5-6-7)	90169	Tool Crib Racks	419.22
6219 & 6292	90170	Truck for Compar. Screens	73.47
12408	90171	Rack for Comparator	149.28
-	90173	4 Assembly Trays	29.88
-	90174	4 Assembly Trays	45.50
-	90202	Design & Layout Time for Prod. Aids	813.21
6554-6556	90209	2 Rack Conveyors	180.40
- -	90211	Burn-Off Rack	185.40
6293	90218	6-Wheel Truck	39.95

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PLANT INCREASE DETAIL
PROJECT FD-721
-6-

721-5 Production Aids Continued

Inv.No.	W.O.No.	Description		
23539	90226	Matching Rack for M721 B.Plates	80.26	
12494-5	90236	Wash tanks, etc.	38.75	
22051		Floor pan	18.49	
-		Exhaust Pipe	178.07	
-		Steam & water	261.60	
12486		Fan, etc.	130.45	
12475	90237	Hoist & Reel	362.72	
-	91401	4 Wire Baskets (oil quench)	42.60	
-	91402	Lindberg Racks & Baskets (7)	506.31	
23541	91403	Arbor Rack	82 93	
22596	91404	Move Hoist & Clean	15.73	
	91405	Portable Support Truck	105.71	
-	91406	Temp. Controller	190.61	
-	91407	Blow pipe for brazing	4.41	
-	91408	Tray lifting fixture	13 36	
12462	91409	Modify Tocco Brazer.	115 86	
12462	91410	Tocco Valves	12.04	
-	91411	Gage Rack	24 17	
12441	91412	Tray for Machine #21441	41 47	
12382	91413	Chute on Screw Mach.	9.96	
-	91414	Reamer Rack	18.97	
12439	91415	Rack on Broach #12439	12.18	
12378 &) 12476)	91416	3 Chip baskets for Miller	40.22	
-	91417	500 Inv. # Tags on 500 Tote Pans	31.59	
6427-6428	91420	2 Stock Trucks	122.23	
6487to6518	91421	28 Gage Benches -Wood	235.18	
-	91422	3 Wash Racks	125.79	
		6 Pickling baskets		25,108.83

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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

APPROPRIATION REQUEST

Department Technical Works Elizabethtown Project No. FD-721 PART III

Request for $ 17,170. REDUCTION Date 4/13/48

Category ESTABLISHED PRODUCT

Title MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE.

PARTS I + II - PREVIOUSLY AUTHORIZED - $1,113,170.
PART III - THIS REQUEST (17,170.) REDUCTION.
$1,096,000.

This project is included in Forecast No. 2 in the amount of $ 29,790.

To be commenced Upon approval

To be ready for use

To be physically completed Sept. 1948.

Estimate prepared by _____ 4/12/48 Date

Approved as to form, accounting aspects, and rules compliance

_____ Treasurer or Assistant Treasurer _____ Date

	Date
Approved or Authorized _____	
Approved or Authorized _____	
Approved or Authorized _____	
Approved or Authorized _____	
Approved or Authorized _____	
President and General Manager	
Authorized BOARD OF DIRECTORS	
_____ Secretary	

Preliminary approvals:

	Date		Date
_____		_____	
_____		_____	
_____		_____	

RT-154

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD721 - Ilion WORKS

	Labor	Material	Total
Land	—	—	—
Manufacturing buildings	—	401,527	401,527
Manufacturing equipment	—	—	—
Power and service facilities	94,075	198,800	292,875
Tooling	—	—	—
Dismantling and rearranging	401,598	—	401,598
Product development	—	—	—
Machine development	—	—	—
Project administration	—	—	—
Other	—	—	—
	$495,673	$600,327	$1,096,000
Provision for advancing wages and material prices	—	—	—
TOTAL	$495,673	$600,327	1,096,000

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	Expenditures Previous Parts	Expenditures This ~~Project~~ Part	Adjusting Entries	Final Net Results in Accounts
Plant increase	$701,402.	$(7,000.) RED.	$(2,935.48)	$691,466.52
Operations	411,768.	(10,170) RED.	—	401,598.
Depreciation	—	—	* 2,935.48	2,935.48
	$1,113,170.	$(17,170) RED.		$1,096,000.00

* Write off of five worn obsolete type of machines used for cutter sharpeners. (See schedule in Project FI-172)

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

General Information
Project No. CD721 Phase II - Lion Works.

Introduction

Phase II of this Project authorized funds in the total amount of $1,113,170. to complete all work incurred to place Model 721-722 Rifles in production in eight calibers, including three new Remington calibers as follows:

280 Remington
224 Remington
222 Remington

A review of the program involved in adding these three new Remington cartridges to the ammunition line and providing Model 721 and 722 Rifles to handle these individual magnificent remington pistol series for calibers 280 Remington and 224 Remington. Selection of these two calibers was recommended in a combined meeting of the Arms and Ammunition Product Committees on Mar. 26, 1956 ~~and approved by Management on~~

RAS

Description of Proposed Work

In conformance with this decision, all work on the development of Model 721 for caliber 280 Remington and Model 722 for caliber 222 Remington has been stopped. Development of Model 722 for caliber 222 Remington, however, will be completed for production.

Remarks

A recision in Estimated Earnings and Return on Investment is attached. The Total Investment after completion of this project is reduced by $40,700 from $1,246,765 to $1,206,065, Net Earnings are increased ~~decreased~~ by $213,162 and the Return on Investment is increased ~~decreased~~ from 13.1% to 17.7%.

cc: C. K. Davis
D. F. Carpenter
W. U. Reisinger
B. E. Strader
M. R. Warden
J. F. Craig
E. C. Hadley
H. Gregg.

Bridgeport, Connecticut
March 24, 1948

TO: W. L. CLAY (18)

FROM: G. O. CLIFFORD

SUBJECT: NEW CENTER FIRE CARTRIDGES
~~280 REM - 284 REM - 222 REM~~

In accordance with the Products Committee Chairman's request of March 5, 1948, we submit herewith the attached study covering the overall story of guns and ammunition on the subject calibers.

The results of this study indicate the return on the combination gun and ammunition development is only 10.8%. Therefore, the project should be examined in view of this information, to determine if there are any other reasons why it should be continued. It was also found that the ballistics of the cartridges developed are approximately those of the original objectives.

It is suggested the report and recommendations be reviewed at a combined meeting of the Arms and Ammunition Divisions of the Products Committee.

G. O. Clifford
Technical Director

GHJ/fgh
Attachs.

I SUMMARY

Purpose of Study

The proposal to develop a line of new "Remington" high power center fire cartridges has been under consideration for a number of years. Experimental work with the cartridges has been underway since January 1946 and recently culminated in pilot production runs (up to 6000) of the following:

.280 Remington-150 gr. S.P.C.L.
.280 " 130 gr. S.P.C.L.
.224 " 56 gr. S.P.
.222 " 48 gr. S.P.

The major portion of the gun development and tooling of the new model rifles to accommodate the three new calibers is yet to be done.

There has always been considerable question as to the economics of the three new cartridge and gun developments. Recent information indicates a $2.00 increase in each rifle cost for the Caliber .224 Remington. Further review indicates the ballistics of some items are less desirable than was anticipated. In view of this the March 4, 1948 meeting of the Products Committee recommended the discontinuance of gun and cartridge work on the Caliber .280 Remington until a final decision is reached on the 130 gr. bullet design, which was followed by a request for a complete review of the program.

The work reported herein includes an economic and ballistic evaluation based on current information.

Results

1. Economics of the new cartridges based on Pointed S.P. bullets in .224 Remington, .222 Remington and S.P.C.L. bullet in .280 Remington, 150 gr. and pointed core-lokt in .280-130 gr. are as follows:

	Cash Outlay	Working Capital	Total Investment	Net Gain		% Return
.280-150 gr. S.P.C.L.	$ 7,020)	$10,260	40,880	1950)	5780	14.1
.280-130 gr. Pointed C.L.	23,600)			3830)		
.224 Rem.-56 gr.S.P.Pointed	16,270	770	17,040	388		2.3
.222 Rem.-48 gr.S.P.Pointed	12,570	5,300	17,870	2420		13.6
Total	$59,460	16,330	75,790	8588		11.3

2. Economics of the new model guns chambered for the new calibers are as follows:

Note: Based on M/721-722 only.

	Added Quantity	Cash Outlay	Working Capital	Total	Net Gain	% Return
.280 Rem. M/721	* 500	$13,108	$29,000	42,108	3,032	7.2%
.224 Rem. M/722	330	13,108	4,700	17,808	2,113	11.9%
.222 Rem. M/722	1000	49,308	14,000	63,308	7,687	12.1%
Total	1830	$75,524	$47,700	123,224	12,832	10.4%

3. Economics of the new cartridge-gun combination are as follows:

	Cash Outlay & Working Capital	Net Gain	% Return
.280 Rem.	$ 82,988	$ 8,812	10.6%
.224 Rem.	34,848	2,501	7.2%
.222 Rem.	81,178	10,107	12.5%
Total	$ 199,014	$21,420	10.8%

Expended to date-all calibers guns and ammunition - $47,584
Return on unexpended balance - $21,420 ÷ $151,430 - 14.1%

4. According to the records the ballistics developed for the three new cartridges are very close to the original ballistic objectives. It may be pointed out the original objectives envisioned new center fire cartridges for the new model rifles having the "Remington" name and with only marginal ballistic advantage over existing competitive cartridges.

Recommendations

1- The economics are border line, therefore, a decision as to continuance of the project should be based upon a realistic evaluation of the intangible advantages.

2- If it is decided to go ahead with the development we recommend the bullet design of the .280 Remington caliber be limited to either the S.P.C.L. design or the pointed so-called "nib nose" design.

* Normal Sales Forecast of 2000, .280 Remington caliber and decrease of 1500 in 270 caliber

BIBLIOGRAPHY

Exhibit A — Cost Evaluation Summary - New Center Fire Cartridges

Exhibit B — Cost Evaluation Summary - 280 Rem - 224 Rem - 222 Rem Calibers for Model 721/22 Guns

Exhibit C — Historical information on ballistics of new Center Fire cartridges

-1 Letter dated August 19, 1944 - From J. H. Hodgson to H.A.Brown
Subject: Proposed New Cartridges

-2 Letter dated September 7, 1944 - From H. A. Brown to J. H. Hodgson
Subject: Center Fire Ammunition Development

-3 Letter dated September 18, 1944 - From E. L. Wemple to C. B. Wells
Subject: New Center Fire Cartridges

-4 Tabulation showing ballistics of new Center Fire cartridges compared to objective

-5 Historical account of Products Committee action on new Center Fire cartridge development.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126311
R2527299

BARBER - PRESALE R 0126311

Exhibit A

NEW CENTER FIRE CARTRIDGES

SUMMARY COST EVALUATION 3-22-48

Order of Magnitude Estimates - Accuracy of Costs - 0 to ± 30%

	280-150 gr. S.P.C.L.	280-130 gr. Pointed C.L.	224-56 gr. S.P.	222-48 gr. S.P.	Total
Normal Sales Volume-Rem.	88 M	190 M	24 M	190 M	492M
Peters	13	29	4	29	75
Total	101	219	28	219	567
Outside Sales $	$7,700	$16,700	$1,800	$9,200	$35,400
Gross Margin	3,260	6,400	650	4,050	
Less 8% of all other Exp.	260	510	52	320	
	3,000	5,890	598	3,730	
Less 35%	1,050	2,060	210	1,310	
Net Prospective Gain	1,950	3,830	388	2,420	8,588
Expenditure:					
Technical Division	5,550	14,600	14,800	11,100	
Plant	1,470	9,000	1,470	1,470	
Total	7,020	23,600	16,270	12,570	$59,460
Added Working Capital	3,220	7,040	770	5,300	16,330
Total Investment	10,240	30,640	17,040	17,870	75,790
Return on Investment	19%	12.5%	2.3%	13.6%	11.3%
Unexpended	$1,500	$20,600	$2,000	$1,500	$25,600

Revised 3/22/48 for new Normal Sales Forecast.
GHJ/dd

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC. EXHIBIT B

COST EVALUATION - SUMMARY
M/721-722 - Added Calibers 280 Rem., 222 Rem. and 224 Rem.

	Basic 3 Calibers	Add 280 Rem.	Deduct Part Of 270 Rem.	Net Add For 280 Rem.	4 Calibers	2 Calibers	Add 222 Rem.	3 Calibers	Add 224 Rem.	4 Calibers
Sales Quantity	11,430	2,000	1,500	500	11,930	2,370	1,000	3,370	330	3,700
Outside Sales	499,605	87,420	65,565	21,855	521,460	97,075	40,960	138,035	13,517	151,552
Factory Cost										
Direct Material	70,752	12,380	9,285	3,095	73,847	14,670	6,210	20,880	2,828	23,708
Direct Labor	59,207	10,360	7,770	2,590	61,797	12,277	5,230	17,507	1,709	19,216
Mfg. Expense	162,083	27,350	20,513	6,837	168,920	49,319	13,807	63,126	4,512	67,638
Plant Overhead	56,668	-	-	-	56,668	17,575	-	17,575	-	17,575
Inv. Adjustment	6,917	1,002	751	251	7,168	1,859	505	2,364	181	2,545
Tool Amortization	22,905	3,840	-	3,840	26,745	7,104	1,920	9,024	634	9,658
Total	378,532	54,932	38,319	16,613	395,145	102,804	27,672	130,476	9,864	140,340
Admin. & Sales Expense	52,146	-	-	-	52,146	15,155	-	15,155	-	15,155
Total Commercial Cost	430,678	54,932	38,319	16,613	447,291	117,959	27,672	145,631	9,864	155,495
Operative Earnings	68,927	32,488	27,246	5,242	74,169	(20,884)	13,288	(7,596)	3,653	(3,943)
Net Earnings	39,874	18,794	15,762	3,032	42,906	-	7,687	-	2,113	-
Investment	920,677	32,600	-	32,600	953,277	255,588	29,600	285,188	8,300	293,488
Development Cost	215,426	9,508	-	9,508	224,934	143,618	33,708	177,326	9,508	186,834
Total	1,136,103	42,108	-	42,108	1,178,211	399,206	63,308	462,514	17,808	480,322
Net % Return				7.2%			12.1%		11.9%	

WEG:hsk
3-23-48

BARBER - PRESALE R 012631 R2527300

Exhibit C-1

cc: A. E. Buchanan, Jr.
G. O. Clifford
R. E. Evans
G. R. McCormick

Bridgeport, Connecticut
August 19, 1944

TO: H. A. BROWN

FROM: J. H. HODGSON

SUBJECT: PROPOSED NEW CARTRIDGES

Because of the excessive variety of ammunition now being manufactured here, it is thought that new cartridges should be considered for production only if they meet one of the following qualifications:

1. Will fill a performance deficiency in the line of products - such as a high power low cost rimfire cartridge like the .267 Rim Fire.

2. Provide more universal performance and will, therefore, actually obsolete several products now being made.

3. Will be capable of withstanding higher pressures than existing ammunition and, therefore, when combined with a gun which is stronger than competitors, will furnish a combination which will offer better performance than is now available.

This last qualification will be difficult to meet as ammunition is in general loaded to maximum safe pressure limits and even a slight increase results in case casualties or primer difficulties.

The proposed new cartridges are evaluated on this basis below.

A. .284 Remington Magnum

Proposed Bullets - 139 grain M Core Lokt, 139 grain Pointed Soft Point, and 175 grain Pointed Soft Point.

Ballistics

139 grain M Core Lokt	M.V. 3280 ft/sec.	M.E. 3320 ft. lbs/sec.
139 grain Pointed Soft Point	M.V. 3380 ft/sec.	M.E. 3500 ft. lbs/sec.
175 grain Pointed Soft Point	M.V. 3060 ft/sec.	M.E. 3640 ft. lbs/sec.

Established cartridges within 500 ft. lbs. per sec. muzzle energy.

1. .300 Magnum

Comments:

There should be some demand for a cartridge of this type for long range big game hunting. However, as .300 Magnum has the same ballistic potential and is already established, it would seem better to develop additional bullets for the latter rather than design a new cartridge. If the Pointed Core Lokt bullet now being developed proves successful, that this be used universally rather than carrying both Mushroom and Pointed Soft Point types.

B. .280 Remington

Proposed Bullets - 139 grain Mushroom Core Lokt, 139 grain Pointed Soft Point and 175 grain Pointed Soft point.

Ballistics

139 grain Mushroom Core Lokt M.V. 3080 ft/sec. M.E. 2930 ft. lbs/sec.
139 grain Pointed Soft Point M.V. 3230 ft/sec. M.E. 3220 ft. lbs/sec.
175 grain Pointed Soft Point M.V. 2660 ft/sec. M.E. 2750 ft. lbs/sec.

Established cartridges within ± 500 ft. lbs. per sec. muzzle energy.

1. .300 Magnum
2. .30-06 Springfield
3. .270 Winchester
4. .348 Winchester

Comments:

As the .30-06 Springfield is too well established to be affected seriously by other cartridges having the same ballistics and as the proposed new cartridge offers nothing not available in this and the .270 Winchester, the production of this cartridge is not recommended.

C. .276 Remington

Proposed Bullets - 130 grain Mushroom Core Lokt, 150 grain Soft Point Core Lokt.

Ballistics

130 grain Mushroom Core Lokt M.V. 2830 ft/sec. M.E. 2310 ft.lbs/sec.
150 grain Soft Point Core Lokt M.V. 2420 ft/sec. M.E. 1950 ft.lbs/sec.

Established cartridges within ± 500 ft, lbs. per sec. muzzle energy.

1. 7 m/m Mauser
2. 7.92 m/m Mauser
3. 8m/m Lebel
4. .220 Swift
5. .257 Remington-Roberts
6. .270 Winchester
7. .30-30 Winchester
8. .30 Remington
9. .300 Savage
10. .30-40 Krag

11. .303 Savage
12. .303 British
13. .32 Remington
14. .32 Winchester
15. .348 Winchester
16. .35 Remington
17. .35 Winchester
18. .401 Winchester
19. .405 Winchester
20. .45-70 High Velocity

Comments:

In view of the excessive number of cartridges available with approximately the same muzzle energy and because these cartridges are used mainly for deer and medium game hunting which does not have critical ballistic requirements, the production of this cartridge is not recommended.

D. .224 Remington

Proposed Bullets - 48 grain Pointed Soft Point, 55 grain Mushroom.

Ballistics

48 grain Pointed Soft Point M.V. 4200 ft/sec. M.E. 1880 ft.lbs/sec.
55 grain Mushroom M.V. 3950 ft/sec. M.E. 1910 ft.lbs/sec.

Established cartridges within ± 300 ft. lbs. per sec. muzzle energy.

1. 6.5 m/m Mannlicher
2. .220 Swift
3. .25-35 Winchester
4. .250 Savage
5. .257 Remington-Roberts
6. .30-30 Winchester
7. .30 Remington
8. .300 Savage
9. .30-.40 Krag
10. .303 Savage
11. .32 Remington
12. .32 Winchester

Comments:

All the cartridges in the above list do not compare directly with the proposed .224 Remington for specific use on predatory game but are shown as "all around" cartridges which can successfully be used in this type of shooting. They also have the advantages of other uses and, therefore, represent sales competition to this product. It is thought that the great majority of shooters would prefer a more adaptable cartridge than this and as there is sufficient choice available for vermin cartridges, its production is not recommended unless it can be shown that it will definitely obsolete several other cartridges.

E. .220 Remington

Proposed Bullets - 45 grain Soft Point.

Ballistics

45 grain soft Point M.V. 3150 ft./sec. M.E. 990 ft.lbs/sec.

Established cartridges within ± 300 ft. lbs. per sec. muzzle energy.
(.22 to .30 Cal.)

1. .213 Bee
2. .219 Zipper
3. .22 Hornet
4. .22 Savage
5. .25-20 Winchester
6. .30 Carbine

Comments:

This cartridge is a border-line case. It offers attractive ballistics for woodchuck and crow shooting but this is countered by a fairly wide selection of other cartridges in the same range for a rather limited field of shooting. If it could be counted on to obsolete .218 Bee, the .22 Hornet, the .25-20 Winchester and the .32-20 Winchester, its production is recommended otherwise not.

General:

The classification of established cartridges with approximately the same ballistic performance as the proposed cartridge is known to be somewhat empirical and open to criticism. It is, however, intended to show the wide selection already available to shooters and to indicate the complexity of manufacturing all these items.

As the comments on the above cartridges largely represent only the manufacturing view point and are probably somewhat prejudiced in favor of simplification, it is suggested that this program be discussed at the next Staff Meeting.

Engineering Superintendent
Ammunition Section

JHH/hb

Exhibit C-2

CC: A. E. Buchanan, Jr.)
G. O. Clifford) 1
R. E. Evans
G. R. McCormick

Bridgeport, Connecticut
September 7, 1944

TO: J. H. HODGSON

FROM: H. A. BROWN

SUBJECT: CENTER FIRE AMMUNITION DEVELOPMENT

Your comments contained in your letter of August 19 are interesting. It is true that a wide selection of center fire cartridges is available for sportsmen; conceivably more than are actually needed. However, obsolescence of calibers for which a quantity of guns is at present available consumes appreciable time because of the traditional pride not only of ownership of old guns but also of continuing use of these guns.

This situation, however, has not prevented competition from developing new cartridges identified by their name, thereby gaining valuable prestige in the market. The 1942 listing of center fire ammunition includes 73 calibers. Eliminating "Miscellaneous" and "Foreign" and using only those cartridges which carry an Arms Company name, we have 51 cartridges, divided as follows:

Name	Number	Percent
Winchester	23	45.1%
Colt	11	21.5
Remington	5	9.8
Smith and Wesson	5	9.8
Savage	4	7.8
Springfield, Krag, Government	3	6.0
	51	100.0

In addition to the above, some miscellaneous items are recognized by the trade as Winchester developments: .218 Bee, .219 Zipper, .220 Swift. Winchester and Western also are credited with sponsoring the .300 and .375 Magnums. The .22 Hornet was developed at the Springfield Armory but was promoted commercially by Winchester. In this picture there is a glaring dearth of

SUBJECT: CENTER FIRE AMMUNITION DEVELOPMENT

"Remington" calibers.

Sportsmen, when buying ammunition of Remington manufacture, are undoubtedly speaking the names Winchester, Savage, Springfield, etc., to the clerk in making their wants known. The .30/30 cartridge is known as ".30/30 Winchester" or "Winchester Center Fire (WCF)" and not as ".30/30 Remington" or"Remington Center Fire". The name is ".270 Winchester"; not ".270 Remington" - ".300 Savage"; not ".300 Remington". In only five of the 73 items listed for sale does the name Remington identify the cartridge.

To impress the trade with the fact that we can and do contribute to new developments in the ammunition field, we have proposed new "Remington" calibers. These, we believe, are susceptible to relatively simple, inexpensive and prompt development so as to be available for our new guns which are being designed wisely to handle greater pressures than present standards. This objective in gun design, therefore, will permit further improvement to ammunition in the future whereby even greater speed, pressure, power and flatter trajectory can be achieved.

The proposed bullets have been selected from existing designs to obtain greater sustained velocity and flatter trajectory. Undoubtedly better bullets will, and should be, conceived in the future and introduced as improvements to keep the line "alive".

In your discussion you have listed established cartridges within plus or minus 500 foot pounds muzzle energy of the proposed new items. In our opinion, this consideration is too broad. On such a premise, the following more recent popular cartridges could not have justified development:

.22 Hornet	.300 Savage
.220 Swift	.270 Winchester
.250 Savage	.35 Remington

These cartridges, however, were introduced and they definitely increased trade prestige of the identifying names. Remington's contribution has been mighty meagre. We hope it can be revived promptly and kept "alive" in the future.

The superior performance of new cartridges should eventually replace existing ones and in their adaptation to our new gun designs they will stimulate arms sales.

HAB:MR

Exhibit C-3

cc: G. O. Clifford
R. E. Evans

Bridgeport, Connecticut
September 18, 1945

TO: C. B. WELLS

FROM: E. L. WEMPLE

SUBJECT: NEW CENTER FIRE CARTRIDGES

In recent years a number of suggestions have been received for Remington to develop and market new design center fire cartridges. Herewith is material which lists and describes many of the proposed center fire cartridges. The same type of descriptive material is supplied for existing center fire cartridges. The proposed new cartridges considered are:

220 Remington	308 Remington Magnum
224 Remington	359 Remington Magnum
276 Remington	400 Remington Magnum
258 Remington	450 Remington Magnum
280 Remington	Donaldson Wasp
350 Remington	22 High Velocity
284 Remington Magnum	333 OKH

The material is arranged as follows:

1. Proposed new Remington cartridges with descriptive material.

2. A letter by J. H. Hodgson listing present cartridges that would compete with several of the proposed new cartridges.

3. A board showing appearance samples and some descriptive material for some of the proposed new cartridges.

4. Comments on each of the new cartridges relative to the manner in which the new cartridge would fit into the present line.

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KINZER V. REMINGTON

SUBJECT: NEW CENTER FIRE CARTRIDGES

5. Full descriptive material on existing rifle cartridges grouped as follows:

a. 22 Cal.
b. 25 Cal.
c. 270 Cal.
d. 30 Cal.
e. 32 Cal.
f. 35 Cal.
g. 375 Magnum and 30 Cal.
h. 40 Cal.
i. 44 Cal.

6. A tabulation showing factory cost, commercial cost and net selling price for typical center fire cartridges at 1939 and at 1945 costs.

E. L. Wemple, Manager
Development Division
Technical Department

ELW:MR
Att.

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KINZER V. REMINGTON

COMMENTS ON
PROPOSED NEW CENTER FIRE CARTRIDGES

220 REMINGTON

$70.00 M retail price is too high. Comparable cartridges sell for much less money.

224 REMINGTON

This cartridge has a higher velocity than competing cartridges except the 220 Swift and it does have a slightly higher energy than the 220 Swift. The 224 Remington might have some advantage over competition if the 4,000 f/s velocity can be regularly obtained and if the accuracy is equal to or better than the Hornet, Swift and Zipper.

276 REMINGTON

It is planned to sell this at the same price as the 300 Savage, yet it has lower velocity and bullet energy.

258 REMINGTON

This cartridge lies between the 257 Roberts 100 grain bullet with 2800 f/s velocity and the 30-06 110 grain bullet with 3280 f/s velocity.

280 REMINGTON

This cartridge is almost identical with 30-06 and 270 Winchester and would not appear to have any advantage over those cartridges.

350 REMINGTON

This cartridge has the same ballistic characteristics as the 35 Newton. It is slightly more powerful than the 30-06 220 grain cartridge and has much more power than the 348 Winchester, 35 Winchester and 35 Remington.

284 REMINGTON MAGNUM

This cartridge is almost identical with the 300 Magnum.

308 REMINGTON MAGNUM

This cartridge is more powerful than the 300 Magnum but is not as powerful as the 375 Magnum. It would probably be a small sales volume item.

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KINZER V. REMINGTON

COMMENTS ON
PROPOSED NEW CENTER FIRE CARTRIDGES

359 REMINGTON MAGNUM

This cartridge compares with the 375 Magnum but has a slightly lower velocity and lower 300 yard bullet energy.

400 REMINGTON MAGNUM

This cartridge is somewhat more powerful at 300 yards than the 375 Magnum.

450 REMINGTON MAGNUM

This cartridge is more powerful than the 375 Magnum.

THE DONALDSON WASP

This cartridge has the same characteristics as the 224 Remington but has a rimmed case.

22 HIGH VELOCITY (G. R. McCormick)

This cartridge has the same ballistic characteristics as the 224 Remington but has a larger case. Personnel in the Ammunition Technical Division are not familiar with this cartridge and considerable investigation work is needed.

333 OKH

This cartridge, with its different bullet weights, has approximately the velocity and energy of the 350 Remington, 359 Remington and 450 Remington Magnums but has a much smaller case. Much additional investigation work would be necessary to determine if this would be a practical cartridge to load and sell. Such problems as sensitivity, pressure and load technique would require thorough investigation.

ELW:MR
9-18-45

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KINZER V. REMINGTON

BARBER - PRESALE R 0126323

Exhibit C-4

TABULATION SHOWING BALLISTICS OF NEW CENTEP FIRE CARTRIDGES COMPARED TO OBJECTIVE

	.222 REMINGTON			.224 REMINGTON			
	Green Board 11-8-45 .220 Rem. 45 gr. S.P. (Approx.)	Dec.-1946 Report .222 Rem. 48 gr. S.P.	Nov.-1947 Development .222 Rem. 48 gr. S.P.	Green Board 11-8-45 .224 Rem. 48 gr. S.P. (Approx.)	Green Board 11-8-45 .224 Rem. 55 gr. S.P. (Approx.)	Dec.-1946 Report .224 Rem. 56 gr. S.P.	10-1-47 Development .224 Rem. 56 gr. S.P.
Velocity-Muzzle		3110	3150			4000	3954
Instrumental	3000		3000	4000	3900		3800
100 yds.		2690	2690			3485	3380
200 "			2100				2854
300 "			1670				2378
500 "			1100				1698
Energy - Muzzle		1030	1056			1990	1942
100 yds.		775	714			1510	1419
200 "			470				1012
300 "			297				702
500 "			129				317
Pressure-Max.Aver.(10)			50000				51000
Trajectory-Bullet Drop							
100 yds.							
200 "							
300 "							
Accuracy-M.R.-200 yds.			1.5"				1.5"

GHJ:dd
3-24-48

BARBER - PRESALE R 0126323
R2527311

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KINZER V. REMINGTON

BARBER PRESALE R 0126324

.280 REMINGTON

Exhibit C-4

	Green Board 11-8-45 Products Committee			Dec.-1946 Report	May - Oct. 1947 Development		
					- .280 Remington -		
	.280 Rem. 139 Pt.S.P. Proposed Cartridge (Approx.)	.280 Rem. 139 Mush. Proposed Cartridge (Approx.)	.280 Rem. 175 Pt.S.P. Proposed Cartridge (Approx.)	.280 Rem. 150 Pointed Core Lokt	150 S.P. Core Lokt	150 S.P. Core Lokt	130 Pointed Core Lokt
Velocity-Muzzle				2910	2906	3148	3175
Instrumental	3150	3000	2650		2800	3000	3065
100 yds.				2670	2526	2628	2775
200 "					2209	2215	2440
300 "					1937	1876	2150
500 "					1517	1393	1685
Energy - Muzzle				2930	2810	2857	2906
100 yds.				2380	2123	1991	2220
200 "					1623	1415	1717
300 "					1250	1015	1333
500 "					765	560	819
Pressure-Max.Aver.(10)					50000	52000	
Trajectory-Bullet Drop							
100 yds.					2.3"	2.0"	1.9"
200 "					10.0"	9.0"	8.4"
300 "					24.9"	23.3"	20.9"

GHJ:dd
3-24-48

BARBER - PRESALE R 0126324
R 2527312

CC: S. M. Alvis
G. M. Calhoun
H. K. Faulkner
K. C. Gilmore (5)
A. J. Greene
W.F.H.Mattlage
J. J. Phillips
A. J. Seckner
Ilion Tech. File

ADVICE OF PHYSICAL COMPLETION

Technical Department

WORKS - Ilion

DATE - 12/19/49

PROJECT - FD-721

TO: G. W. Radley

FROM: K. C. Gilmore

SUBJECT: MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

All work having been completed on this project, it is now being physically closed in its entirety.

K. C. Gilmore
Arms Technical Division

Requested by

Approved by

ml
12/19/49

CC: W. E. Gregg

Ilion, New York
April 14, 1948

TO: W. C. Burckel

FROM: K. C. Gilmore

SUBJECT: PROJECT FD-721 Part III
MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

We are transmitting herewith forty nine (49) copies of the subject Project. The copy containing Ilion's signatures has been forwarded to W. E. Gregg, as per his request, for review prior to securing the Bridgeport signatures.

I would suggest that you contact Mr. Gregg and have him turn over the copy containing the signatures to you for circulation at Bridgeport so that all necessary approvals are secured.

(SIGNED) K. C. GILMORE

K. C. Gilmore
Supervisor-Control Unit
Ilion Technical Division

ml
att. 49

✓ Technical File - Ilion

R D 1386-REV.

REMINGTON ARMS COMPANY, INC.

APPROPRIATION REQUEST

Department Technical Works Ilion Project No. FD-721 Part III

Request for $ 17,170. Reduction Date 4/13/48

Category Established Product

Title MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

Parts I & II - Previously Authorized - $ 1,113,170.
Part III - This Request - (17,170.) Reduction
$ 1,096,000.

This project is included in Forecast No. 2 in the amount of $ 79,790.

To be commenced upon approval.

To be ready for use

To be physically completed Sept. 1948

Estimate prepared by

K. C. Gilmore 4/12/48
Date

Approved as to form, accounting aspects, and rules compliance

R. D. Jack 4/20/48
Treasurer or Assistant Treasurer — Date

		Date
Approved	H. A. Brown	4-14-48
Approved	H. K. Faulkner	4-14-48
	J. M. Christman	4-16-48
Approved	G. O. Clifford	4-18-48
	R. H. Coleman	4-20-48
Approved	W.F.H.Mattlage	4-20-48
	M. R. Warden	4-20-48
Approved	C. K. Davis	4-22-48
	President and General Manager	
Authorized	BOARD OF DIRECTORS	4-30-48
	R. D. Jack, Secretary	

Preliminary approvals:

	Date		Date

(Subdivision I)

RT-154

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD-721 - Ilion WORKS

	Labor	Material	Total
Land	$ -------	$ -------	$ ---------
Manufacturing buildings	-------	-------	---------
Manufacturing equipment	-------	401,527	401,527
Power and service facilities	-------	-------	---------
Tooling	94,075	198,800	292,875
Dismantling and rearranging	-------	-------	---------
Product development	401,598	-------	401,598
Machine development	-------	-------	---------
Project administration	-------	-------	---------
Other	-------	-------	---------
	$ 495,673	$ 600,327	$ 1,096,000
Provision for advancing wages and material prices	-------	-------	---------
TOTAL	$ 495,673	$ 600,327	$ 1,096,000

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	Expenditures Previous Parts	Expenditures This Part	Adjusting Entries	Final Net Results in Accounts
Plant increase	$ 701,402	$(7,000)Red.	*$(2,935.48)	$ 691,466.52
Operations	411,768	(10,170)Red.	--------	401,598.00
Depreciation	-------	------	* 2,935.48	2,935.48
	$ 1,113,170	$(17,170)Red.		$1,096,000.00

*Write off of five worn obsolete type of machines used for cutter sharpening. (See schedule in Project FI-172)

ml
4/13/48

REMINGTON ARMS COMPANY, INC.

GENERAL INFORMATION

PROJECT NO. FD-721 Part III - Ilion Works

INTRODUCTION:

Part II of this project authorized funds in the total amount of $1,113,170 to complete all work required to place Model 721-722 Rifles in production in eight calibers, including three new Remington calibers as follows:

280 Remington
224 Remington
222 Remington

A review of the program involved in adding these three new Remington cartridges to the ammunition line and providing Model 721 and 722 Rifles to handle them indicated insufficient economic justification for calibers 280 Remington and 224 Remington. Deletion of these two calibers was recommended in a combined meeting of the Arms and Ammunition Product Committees on March 26, 1948.

DESCRIPTION OF PROPOSED WORK:

In conformance with this decision, all work on the development of Model 721 for caliber 280 Remington and Model 722 for caliber 224 Remington has been stopped. Development of Model 722 for caliber 222 Remington, however, will be completed for production.

REMARKS:

A revision in Estimated Earnings and Return on Investment is attached. Net Earnings of $140,736 are estimated with a return of 11.7%.

The R & M Estimate approved April 1, 1948, included the $1,113,700 authorized in Part II and this project therefore anticipates an underrun of $17,170.

ml
4/15/48

Revised 4-16-48
WEG:hsk

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT

Project No. FD-721 Part III - Ilion Works
6 Cal.

CATEGORY: ESTABLISHED PRODUCT

	Normal Year		
	Operation before Project No. FD-721	Operation after Project No. FD-721	Results from Project No. FD-721
Quantity	262,010	274,810	12,800
Outside Sales	$6,229,197	$6,618,387	$ 389,190
Less: Mill cost	$4,962,070	$5,107,982	$ (145,912)
Selling and administrative expense	661,839	661,839	-------
	$5,623,909	$5,769,821	$ (145,912)
Operative Earnings	$ 605,288	$ 848,566	$ 243,278
Less: All other expense @ 11% (excludes Federal taxes on income)			26,761
Net earnings before Federal taxes on income			$ 216,517
Less: Federal taxes on income @ 35%			75,781
NET EARNINGS			$ 140,736
INVESTMENT			
Total appropriation request under this project (including development)			$1,096,000
Less: Amount included therein for manufacturing facilities subject to allocation:			
Equipment	$ 401,527		
Tooling	292,875		694,402
			$ 401,598
Add: Investment in facilities used directly in this operation and applicable service and other manufacturing facilities			819,341
Total investment			$1,220,939
Working capital			386,724
Total capital required			$1,607,663
Less: Portion of this project to be charged to operations (including development) or depreciation reserve			401,598
Total investment after completion of this project			$1,206,065
RETURN ON INVESTMENT			
Total capital required			8.8%
Total investment after completion of this project			11.7%

ml
4/15/48

REMINGTON ARMS COMPANY, INC.

ESTIMATE OF SAVINGS
Present Model vs. Proposed Model

BASED ON NORMAL YEAR

PROJECT NO. FD-721 Part III - Ilion WORKS
6 Cal.

	Total Line Including Present Model	Proposed Model	Difference
Quantity	262,010	274,810	12,800
Outside Sales	$6,229,197	$6,618,387	$ 389,190
Factory costs:			
Direct Material	836,874	919,266	(82,392)
Direct Labor	822,043	864,807	(42,764)
Expense:			
Direct and Indirect	2,790,632	2,797,303	(6,671)
Fixed	250,000	250,000	
Inventory adjustment	93,991	96,628	(2,637)
Deferred tooling cost	168,530	179,978	(11,448)
Total factory cost	$4,962,070	$5,107,982	$(145,912)
Selling and administrative expense	661,839	661,839	-------
	$5,623,909	$5,769,821	$(145,912)
Operative earnings	$ 605,288	$ 848,566	$ 243,278
Less: All other expense @ 11%			26,761
Estimated savings before Federal taxes on income			$ 216,517
Less: Federal taxes on income @ 35%			75,781
Estimated net savings (normal year)			$ 140,736
Total estimated expenditure, excluding $250,000 of equipment for other models			$ 846,000
Net return on expenditure			16.6%
Total estimated expenditure, excluding $401,527 of equipment*			$ 694,473
Net return on expenditure			20.3%

*Equipment for general use which would have to be purchased on a necessity basis at a reasonably early date.

nl
4/14/48

REMINGTON ARMS COMPANY, INC.

DETAIL ESTIMATE OF EXPENDITURES
M/721-722 - Project FD-721 - Part III

	Amount Previously Authorized	Amount Requested This Part	Added Cost To Complete	Total Estimated Cost
DEVELOPMENT (FD-721-1)				
Design				
Investigation	$ 1,061	$--------	$-------	$ 1,061
Design	15,616	--------	-------	15,616
Design Revisions	33,053	(1,003)	-------	32,050
Model Making	18,080	-----	-------	18,080
	$ 67,810	$ (1,003)	$-------	$ 66,807
Specifications				
Testing	$ 20,687	$ (1,000)	$-------	$ 19,687
Specifications	8,213	-----	-------	8,213
	$ 28,900	$ (1,000)	$-------	$ 27,900
Product Engineering				
Process Engineering	$ 94,700	$ (1,500)	$-------	$ 93,200
Trial Run	29,950	(1,000)	-------	28,950
	$ 124,650	$ (2,500)	$-------	$ 122,150
Tooling Revisions				
Tool Design Revisions	$ 35,400	$ -----	$-------	$ 35,400
Tool Revisions	46,935	(935)	-------	46,000
	$ 82,335	$ (935)	$-------	$ 81,400
Administrative				
Engineering Files	$ 6,219	$ (851)	$-------	$ 5,368
Project Engineering	15,381	(1,381)	-------	14,000
	$ 21,600	$ (2,232)	$-------	$ 19,368
TOOLING (FD-721-2)				
Design	$ 96,075	$ (3,000)	$-------	$ 93,075
Tools	203,800	(4,000)	-------	199,800
	$ 299,875	$ (7,000)	$-------	$ 292,875
SPECIAL MACHINERY (FD-721-3)	-------	-----	-------	-------
STANDARD MACHINERY (FD-721-4)	374,527	$ -----	$-------	$ 374,527
PRODUCTION AIDS (FD-721-5)	$ 27,000	$ -----	$-------	$ 27,000
PILOT OPERATIONS (FD-721-6)				
Quality Audit	$ 3,230	$ -----	$-------	$ 3,230
Methods Engineering	1,460	-----	-------	1,460
Machine Changes&Additions	10,060	(3,500)	-------	6,560
Machine Rearrangement	1,900	-----	-------	1,900
Pilot Lot Manufacture	61,823	2,000	-------	63,823
Tool Replacement	8,000	(1,000)	-------	7,000
Credit for O.K. Guns	------	-----	-------	------
	$ 86,473	$ (2,500)	$-------	$ 83,973
SUB TOTAL	$ 411,768	$(10,170)	$-------	$ 401,598
CONTINGENCIES	-------	------	-------	-------
TOTAL	$1,113,170	$(17,170)	$-------	$1,096,000

ml
4/13/48

sent to Bridgeport 9/12/47

RD-1386 Rev. 5-47

REMINGTON ARMS COMPANY, INC.

APPROPRIATION REQUEST

Department Technical Works Ilion Project No. FD-721 Part II

Request for $ 140,273 Date 9/11/47

Category Established Product

Title Model 721-722 Bolt Action High Power Center Fire Rifle

		Date
This project is included in Forecast No. 4 in the amount of $ 140,273	Approved or Authorized _____	_____
To be commenced Upon Approval	Approved or Authorized _____	_____
To be ready for use June 1948	Approved or Authorized _____	_____
To be physically completed	Approved or Authorized _____	_____
Estimated prepared by	Approved or Authorized _____	_____
K. C. Gilmore 9/11/47 (Date)	President and General Manager	
	Authorized BOARD OF DIRECTORS	_____
Approved as to form, accounting aspects, and rules compliance	_____ Secretary	
_____ Treasurer or Assistant Treasurer _____ Date		

Preliminary approvals:

	Date		Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ml

RT-154

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD-721 - Ilion WORKS

	Labor	Material	Total
Land	$ ---	$ ---	$ ---
Manufacturing buildings	---	---	---
Manufacturing equipment	---	401,527	401,527
Pow er and service facilities	---	---	---
Tooling	96,075	203,800	299,875
Dismantling and rearranging	---	---	---
Product development	411,768	---	411,768
Machine development	---	---	---
Project administration	---	---	---
Other	---	---	---
	$ 507,843	$ 605,327	$ 1,113,170
Provision for advancing wages and material prices	---	---	---
TOTAL	$ 507,843	$ 605,327	$ 1,113,170

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	Expenditures Previous Part	Expenditures This Part	Adjusting Entries	Final Net Results in Accounts
Plant increase	$ 689,547	$ 11,855	*$(2,935.48)	$ 698,466.52
Operations	283,350	128,418	---	411,768.00
Depreciation	---	---	* 2,935.48	2,935.48
	$ 972,897	$ 140,273		$ 1,113,170.00

*Write off of five worn obsolete type of machines used for cutter sharpeners. (See schedule in Project FI-172)

ml 9/11/47

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

INTRODUCTION:

Part II of this Project requests additional authorization of $140,273 and reallocation of funds in the amount of $75,524 authorized on December 27, 1946 under Project AD-721, Part I.

These funds are necessary to complete all work required to place Model 721-722 Rifle in production in 8 calibers.

DESCRIPTION OF PROPOSED WORK:

Additional funds requested will cover unpredicted overruns in the various categories as follows:

	AUTHORIZED	SPENT 8/31/47	ESTIMATED TOTAL	ESTIMATED (OVERRUN)
Design Specifications and Testing	$ 88,355	$ 74,424	$ 96,710	$(8,355)
Processing	68,337	84,509	94,700	(26,363)
Trial and Pilot Operations	75,773	96,594	116,423	(40,650)
Tool Design, Tooling and Tooling Revisions	320,036	331,766	382,210	(62,174)
Machinery and Production Aids	399,346	401,972	401,527	(2,181)
Administrative	21,050	16,193	21,600	(550)
Total Cost *$	972,897	$1,005,458	$1,113,170	$(140,273)
Indicated % Overrun				15%

*Includes:

FD-721, Part I, authorized for	$ 897,373
AD-721, Part I, authorized for	75,524
Total	$ 972,897

Additional Technical service is necessary to obtain production to required quality standards. The cost of a study on cutting tools to improve tool mortality has been required.

Change in the design of the fire control to avoid patent infringement has been necessary subsequent to the authorization of Part I. Further Engineering work is required in connection with parts purchased from outside vendors in order to obtain necessary quality standards.

ml 9/16/47 -1-

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

REMARKS:

The revisions to processing and tooling during trial and pilot operations to establish production of components to required standards of quality were much greater than anticipated in September 1946 when Part I of this Project was authorized.

Included in the total expenditure on this Project is $401,527. for Machinery and Production Aids, of which $250,000. covers new machine capacity which is not required exclusively for Model 721 and 722 production, and is available for other models.

It was originally intended to perform the development work for the .280 caliber in the Model 721, .224 caliber and .222 caliber in the Model 722 under Project AD-721, Part I, for $75,524. It is now proposed to combine Project AD-721 with Project FD-721 and complete all work under Part II of this Project.

ml 9/16/47 -2-

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT
PROJECT NO. FB-721, PART II - ILION WORKS
CATEGORY: ESTABLISHED PRODUCT

	Normal Year		
	Operation Before Project No. FB-721	Operation After Project No. FB-721	Results From Project No. FB-721
Quantity	239,610	253,240	13,630
Outside Sales	$5,533,946	$5,932,046	$ 398,100
Less: Mill Cost	$4,359,895	$4,514,391	$ (154,496)
Selling and Administrative Expense	889,807	889,807	-
	$5,249,700	$5,404,198	$ (154,496)
Operative Earnings	$ 284,246	$ 527,848	$ 243,602
Less: All Other Expense @ 2% (excludes Federal taxes on income)			19,488
Net Earnings before Federal taxes on income			$ 224,114
Less: Federal taxes on income @ 35%			78,440
Net Earnings			$ 145,674
Investment			
Total appropriation requested under this project (including development)			$1,113,170
Less: Amount included therein for manufacturing facilities subject to allocation -			
Equipment $401,587			
Tooling 299,875			701,462
			$ 411,708
Add: Investment in facilities used directly in this operation and applicable service and other manufacturing facilities			708,530
Total Investment			$1,120,238
Working Capital			385,000
Total Capital Required			$1,507,298
Less: Portion of this project to be charged to operations (including development) or depreciation reserve			411,768
Total Investment after completion of this project			$1,115,530
Return on Investment			
Total Capital Required			9.5%
Total Investment after completion of this project			13.1%

PROJECT FD-721-PART II

COMPUTATION OF GROSS PROFIT OR (LOSS)
M/720 vs. M/721-722 (8 calibers)

BASED ON NORMAL YEAR OF 12 YEAR SALES

	TOTAL LINE INCLUDING M/720	M/721-722	Difference
Quantity	239,610	253,240	13,630
Outside Sales	$ 5,533,946	$ 5,932,046	$ 398,100
Factory Costs			
Direct Material	772,377	859,878	(87,501)
Direct Labor	714,998	760,030	(45,032)
Expense			
Direct & Indirect	2,367,473	2,374,498	(7,025)
Fixed	238,412	238,412	-----
Total Expense	2,605,885	2,612,910	(7,025)
Total Factory Cost	$ 4,093,260	$ 4,232,818	$ (139,558)
Inventory Adjustment	$ 81,864	$ 84,656	$ (2,792)
Deferred Tooling Cost	184,769	196,917	(12,148)
Total Factory Cost	$ 4,359,893	$ 4,514,391	$ (154,498)
General and Administrative	$ 889,807	$ 889,807	-------
Commercial Cost	$ 5,249,700	$ 5,404,198	$ (154,498)
Gross Profit or (loss)	$ 284,246	$ 527,848	$ 243,602
Less: 8% All Other Expense			19,488
Estimated Savings Before Federal Taxes			224,114
Less: 35% Federal Income Taxes			78,440
Prospective Net Savings (Normal Year)			145,674
Total Estimated Expenditure including $150,000 of equipment			861,643
Net % Return on Expenditures			16.9%
* Total Estimated Expenditures excluding $401,527 equipment			711,643
Net % Return on Expenditures			20.5%

*This is on the basis that all equipment included in this Project of $401,527 was of a general use and would have to be purchased on a necessity basis at a reasonably early date.

ml 9/16/47

DETAIL ESTIMATE OF EXPENDITURES
M/721-722 (PROJECT FD-721)
(For Part II)

	Total Requirements to Complete	Amount Authorized	Amount Expended to 8/31/47	Balance Unexpended 8/31/47	Amount Requested This Part
Development (FD-721-1)	$ 325,295	$ 225,343	$ 265,144	$ (39,801)	$ 99,952
Design	67,810	60,985	55,799	5,186	6,825
Investigation	1,061	1,048	551	497	13
Design	15,616	15,408	14,158	1,250	208
Design Revisions	33,053	27,237	23,958	3,279	5,816
Model Making	18,080	17,292	17,132	160	788
Specifications	28,900	27,370	18,625	8,745	1,530
Testing	20,687	19,385	11,001	8,384	1,302
Specifications	8,213	7,985	7,624	361	228
Product Engineering	124,650	86,103	106,160	(20,057)	38,547
Process Engineering	94,700	68,337	84,509	(16,172)	26,363
Trial Run	29,950	17,766	21,651	(3,885)	12,184
Tooling Revisions	82,335	29,835	68,367	(38,532)	52,500
Tool Design Revisions	35,400	13,400	33,381	(19,981)	22,000
Tool Revisions	46,935	16,435	34,986	(18,551)	30,500
Administrative	21,600	21,050	16,193	4,857	550
Engineering Files	6,219	6,600	5,368	1,232	(381)
Project Engineering	15,381	14,450	10,825	3,625	931
Contingencies					
Tooling (FD-721-2)	299,875	290,201	263,399	26,802	9,674
Design	96,075	89,092	84,444	4,648	6,983
Tools	203,800	201,109	178,955	22,154	2,691
Special Machinery (FD-721-3)	---	---	---	---	---
Standard Machinery (FD-721-4)	374,527	374,527	375,465	(938)	---
Production Aids (FD-721-5)	27,000	24,819	26,507	(1,688)	2,181
Pilot Operations (FD-721-6)	86,473	58,007	74,943	(16,936)	28,466
Quality Audit	3,230	6,766	2,831	3,935	(3,536)
Methods Engineering	1,460	1,900	1,210	690	(440)
Machine Changes & Additions	10,060	4,114	5,025	(911)	5,946
Machine Rearrangement	1,900	2,690	1,932	758	(790)
Pilot Lot Manufacture	61,823	44,065	59,548	(15,483)	17,758
Tool Replacement	8,000	5,528	4,672	856	2,472
Credit for O.K. Guns	---	(7,056)	(275)	(6,781)	7,056
Total	$ 1,113,170	$* 972,897	$ 1,005,458	$ (32,561)	$ 140,273

*Includes:
FD-721, Part I, authorized for $ 897,373
AD-721, Part I, authorized for 75,524
Total $ 972,897

ml 9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

9/16/47

9/16/47

Serial work sheet
9/18/47

RD-1386 Rev. 5-47

REMINGTON ARMS COMPANY, INC.

A P P R O P R I A T I O N R E Q U E S T

Department Technical Works Ilion Project No. FD-721 Part II

Request for $ 140,273 Date 9/11/47

Category ~~C - R & M~~ ESTABLISHED PRODUCT

Title Model 721-722 Bolt Action High Power Center Fire Rifle

		Date
This project is included in Forecast No. 4 in the amount of $ 140,273	Approved or Authorized _____	
To be commenced Upon Approval	Approved or Authorized _____	
To be ready for use June 1948	Approved or Authorized _____	
To be physically completed	Approved or Authorized _____	
Estimated prepared by	Approved or Authorized _____	
K. C. Gilmore 9/11/47 (Date)	President and General Manager	
	Authorized BOARD OF DIRECTORS	
Approved as to form, accounting aspects, and rules compliance	Secretary	
Treasurer or Assistant Treasurer — Date		

Preliminary approvals:

	Date		Date

ml

RT-154

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD-721 - Ilion WORKS

	Labor	Material	Total
Land	$ ---	$ ---	$ ---
Manufacturing buildings	---	---	---
Manufacturing equipment	---	401,527	401,527
Pow er and service facilities	---	---	---
Tooling	96,075	203,800	299,875
Dismantling and rearranging	---	---	---
Product development	411,768	---	411,768
Machine development	---	---	---
Project administration	---	---	---
Other	---	---	---
	$ 507,843	$ 605,327	$ 1,113,170
Provision for advancing wages and material prices	---	---	---
TOTAL	$ 507,843	$ 605,327	$ 1,113,170

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	Expenditures Previous Part	Expenditures This Part	Adjusting Entries	Final Net Results in Accounts
Plant increase	$ 689,547	$ 11,855	*$(2,935.48)	$ 698,466.52
Operations	283,350	128,418	---	411,768.00
Depreciation	---	---	* 2,935.48	2,935.48
	$ 972,897	$ 140,273		$ 1,113,170.00

*Write off of five worn obsolete type of machines used for cutter sharpeners. (See schedule in Project FI-172)

ml 9/11/47

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

INTRODUCTION:

Part II of this Project requests additional authorization of $140,273 and reallocation of funds in the amount of $75,524 authorized on December 27, 1946 under Project AD-721, Part I.

These funds are necessary to complete all work required to place Model 721-722 Rifle in production in 8 calibers.

DESCRIPTION OF PROPOSED WORK:

Additional funds requested will cover unpredicted overruns in the various categories as follows:

	AUTHORIZED	SPENT 8/31/47	ESTIMATED TOTAL	ESTIMATED (OVERRUN)
Design Specifications and Testing	$ 88,355	$ 74,424	$ 96,710	$(8,355)
Processing	68,337	84,509	94,700	(26,363)
Trial and Pilot Operations	75,773	96,594	116,423	(40,650)
Tool Design, Tooling and Tooling Revisions	320,036	331,766	382,210	(62,174)
Machinery and Production Aids	399,346	401,972	401,527	(2,181)
Administrative	21,050	16,193	21,600	(550)
Total Cost	*$ 972,897	$1,005,458	$1,113,170	$(140,273)
Indicated % Overrun				15%

*Includes:

FD-721, Part I, authorized for	$ 897,373
AD-721, Part I, authorized for	75,524
Total	$ 972,897

Additional Technical service is necessary to obtain production to required quality standards. The cost of a study on cutting tools to improve tool mortality has been required.

Change in the design of the fire control to avoid patent infringement has been necessary subsequent to the authorization of Part I. Further Engineering work is required in connection with parts purchased from outside vendors in order to obtain necessary quality standards.

ml 9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126342

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

REMARKS:

The revisions to processing and tooling during trial and pilot operations to establish production of components to required standards of quality were much greater than anticipated in September 1946 when Part I of this Project was authorized.

Included in the total expenditure on this Project is $401,527. for Machinery and Production Aids, of which $250,000. covers new machine capacity which is not required exclusively for Model 721 and 722 production, and is available for other models.

It was originally intended to perform the development work for the .280 caliber in the Model 721, [redacted] .224 caliber and .222 caliber in the Model 722 under Project AD-721, Part I, for $75,524. It is now proposed to combine Project AD-721 with Project FD-721 and complete all work under Part II of this Project.

ml 9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT
PROJECT NO. FD-721, PART II - ILION WORKS
CATEGORY: ESTABLISHED PRODUCT

	Normal Year		
	Operation Before Project No.FD-721	Operation After Project No.FD-721	Results From Project No.FD-721
Quantity	239,610	253,240	13,630
Outside Sales	$ 5,533,946	$ 5,932,046	$ 398,100
Less: Mill cost	$ 4,359,893	$ 4,514,391	$ (154,498)
Selling and administrative expense	889,807	889,807	
	$ 5,249,700	$ 5,404,198	$ (154,498)
Operative Earnings	$ 284,246	$ 527,848	$ 243,602
Less: All other expense @ 8% (excludes Federal taxes on income)			19,488
Net earnings before Federal taxes on income			$ 224,114
Less: Federal taxes on income @ 35%			78,440
Net Earnings			$ 145,674
Investment			
Total appropriation requested under this project (including development).			$ 1,113,170
Amount included therein for manufacturing facilities subject to allocation (deducted).			401,527
Investment in facilities used directly in this operation.			490,655
Applicable service and other manufacturing facilities.			
Total Investment			$ 1,202,298
Working Capital			~~137,200~~ 325,000
Total Capital Required			1,527,298 ~~$ 1,339,498~~
Less: Portion of this project to be charged to operations (including development) or depreciation reserve.			$ 411,768
Total investment after completion of this project			$ 1,115,530 ~~927,830~~
Return on Investment			
Total capital required			9.5% ~~10.9%~~
Total investment after completion of this project			13.1% ~~15.7%~~

ml 9/16/47

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT
PROJECT NO. FD-721, PART II - ILION WORKS
CATEGORY: ESTABLISHED PRODUCT

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Less: Federal taxes on income @ 35%			78,440
Net Earnings			$ 145,674
Investment			
Total appropriation requested under this project (including development).			$ 1,113,170
Amount included therein for manufacturing facilities subject to allocation (deducted).			401,527
Existing investment in facilities used directly in this operation.			1,134,825
Applicable service and other manufacturing facilities.			
Total Investment			$ 1,846,468
Working Capital			~~137,200~~ 325,000
Total Capital Required (including facilities to be retired)			2,171,468 ~~$ 1,983,668~~
Less: Investment to be retired and portion of this project to be charged to operations (including development) or depreciation reserve.			$ 1,055,938
Total investment after completion of this project			$ ~~927,730~~ 1,115,530
Return on Investment			
Total capital required (including facilitaes to be retired)			6.7% ~~9.3%~~
Total investment after completion of this project			19.1% ~~15.7%~~

ml 9/16/47

PROJECT FD-721-PART II

COMPUTATION OF GROSS PROFIT OR (LOSS)
M/720 vs. M/721-722 (8 calibers)

BASED ON NORMAL YEAR OF 12 YEAR SALES

	TOTAL LINE INCLUDING M/720	M/721-722	Difference
Quantity	239,610	253,240	13,630
Outside Sales	$ 5,533,946	$ 5,932,046	$ 398,100
Factory Costs			
Direct Material	772,377	859,878	(87,501)
Direct Labor	714,998	760,030	(45,032)
Expense			
Direct & Indirect	2,367,473	2,374,498	(7,025)
Fixed	238,412	238,412	-----
Total Expense	2,605,885	2,612,910	(7,025)
Total Factory Cost	$ 4,093,260	$ 4,232,818	$ (139,558)
Inventory Adjustment	$ 81,864	$ 84,656	$ (2,792)
Deferred Tooling Cost	184,769	196,917	(12,148)
Total Factory Cost	$ 4,359,893	$ 4,514,391	$ (154,498)
General and Administrative	$ 889,807	$ 889,807	-------
Commercial Cost	$ 5,249,700	$ 5,404,198	$ (154,498)
Gross Profit or (loss)	$ 284,246	$ 527,848	$ 243,602
Less: 8% All Other Expense			19,488
Estimated Savings Before Federal Taxes			224,114
Less: 35% Federal Income Taxes			78,440
Prospective Net Savings (Normal Year)			145,674
Total Estimated Expenditure including $150,000 of equipment			861,643
Net % Return ON EXPENDITURES			16.9%
* Total Estimated Expenditures excluding $401,527 equipment			711,643
Net % Return ON EXPENDITURES			20.5%

*This is on the basis that all equipment included in this Project of $401,527 was of a general use and would have to be purchased on a necessity basis at a reasonably early date.

ml 9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DETAIL ESTIMATE OF EXPENDITURES
M/721-722 (PROJECT FD-721)
(For Part II)

	Total Requirements to Complete	Amount Authorized	Amount Expended to 8/31/47	Balance Unexpended 8/31/47	Amount Requested This Part
Development (FD-721-1)	$ 325,295	$ 225,343	$ 265,144	$ (39,801)	$ 99,952
Design	67,310	60,985	55,799	5,186	6,825
Investigation	1,061	1,048	551	497	13
Design	15,616	15,408	14,158	1,250	208
Design Revisions	33,053	27,237	23,958	3,279	5,816
Model Making	18,080	17,292	17,132	160	788
Specifications	28,900	27,370	18,625	8,745	1,530
Testing	20,687	19,385	11,001	8,384	1,302
Specifications	8,213	7,985	7,624	361	228
Product Engineering	124,650	86,103	106,160	(20,057)	38,547
Process Engineering	94,700	68,337	84,509	(16,172)	26,363
Trial Run	29,950	17,766	21,651	(3,885)	12,184
Tooling Revisions	82,335	29,835	68,367	(38,532)	52,500
Tool Design Revisions	35,400	13,400	33,381	(19,981)	22,000
Tool Revisions	46,935	16,435	34,986	(18,551)	30,500
Administrative	21,600	21,050	16,193	4,857	550
Engineering Files	6,219	6,600	5,368	1,232	(381)
Project Engineering	15,381	14,450	10,825	3,625	931
Contingencies					
Tooling (FD-721-2)	299,875	290,201	263,399	26,802	9,674
Design	96,075	89,092	84,444	4,648	6,983
Tools	203,800	201,109	178,955	22,154	2,691
Special Machinery (FD-721-3)	---	---	---	---	---
Standard Machinery (FD-721-4)	374,527	374,527	375,465	(938)	---
Production Aids (FD-721-5)	27,000	24,819	26,507	(1,688)	2,181
Pilot Operations (FD-721-6)	86,473	58,007	74,943	(16,936)	28,466
Quality Audit	3,230	6,766	2,831	3,935	(3,536)
Methods Engineering	1,460	1,900	1,210	690	(440)
Machine Changes & Additions	10,060	4,114	5,025	(911)	5,946
Machine Rearrangement	1,900	2,690	1,932	758	(790)
Pilot Lot Manufacture	61,823	44,065	59,548	(15,483)	17,758
Tool Replacement	8,000	5,528	4,672	856	2,472
Credit for O.K. Guns	---	(7,056)	(275)	(6,781)	7,056
Total	$ 1,113,170	$* 972,897	$ 1,005,458	$ (32,561)	$ 140,273

*Includes:
FD-721, Part I, authorized for $ 897,373
AD-721, Part I, authorized for 75,524
Total $ 972,897

ml 9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

INTRODUCTION:

on December 27, 1946

Part II of this Project requests additional authorization of $140,273 and reallocation of funds in the amount of $75,524 authorized under Project AD-721, Part I.

These funds are necessary to complete all work required to place Model 721-722 Rifle in production in 8 calibers.

DESCRIPTION OF PROPOSED WORK:

Additional funds requested will cover unpredicted overruns in the various categories as follows:

	AUTHORIZED	SPENT 8/31/47	ESTIMATED TOTAL	ESTIMATED (OVERRUN)
Design Specifications and Testing	$ 88,355	$ 74,424	$ 96,710	$(8,355)
Processing	68,337	84,509	94,700	(26,363)
Trial and Pilot Operations	75,773	96,594	116,423	(40,650)
Tool Design, Tooling and Tooling Revisions	320,036	331,766	382,210	(62,174)
Machinery and Production Aids	399,346	401,972	401,527	(2,181)
Administrative	21,050	16,193	21,600	(550)
Total Cost	$* 972,897	$1,005,458	$1,113,170	$(140,273)
Indicated % Overrun				15%

Additional Technical service is necessary to ~~establish sustained~~ obtain production to required quality standards. The cost of a study on cutting tools, [redacted], to improve tool mortality, ~~is included~~ has been required.

Change in the design of the fire control to avoid patent infringement has been necessary subsequent to the authorization of Part I. Further Engineering work is required in connection with parts purchased from outside vendors in order to obtain necessary quality standards.

~~All phases of the development work to put the three additional calibers, .280, .224, and .222, into production will be completed under this Part.~~

ml 9/11/47

* includes
FD721 Pt I authorized for $897,373
AD721 Pt I " 75,524
Total $972,897

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS CO., INC.

GENERAL INFORMATION

PROJECT NO. FD-721 - Ilion WORKS

REMARKS:

~~The extent of work required for~~ revisions to processing and tooling ~~and for~~ trial and pilot operations to establish production of components to required standards of quality were ~~not~~ anticipated in September 1946 when Part I to the Project was authorized. ~~At the time of the estimate for Part I, no provision for obsolete tooling and dies as has subsequently been done on Projects for other new models. This would have amounted to $55,000.~~

We had hoped to complete the Project within a 10% overrun but will be unable to do so and provide necessary Technical service. We underestimated the contingencies of cost to provide new methods and facilities for successful production within the estimate as prepared in September 1946. This additional authorization is requested to finish the job.

In the total expenditures on this Project, ~~is a quarter of a million dollars of new machine capacity which is not required exclusively for Model 721 and 722 production but~~ is available for other models.

It was originally intended to perform the development work ~~necessary to include the~~ .280 caliber in the M/721 and the .224 caliber and .222 caliber in the M/722, under Project AD-721 ~~as follows~~. It is now proposed ~~to~~ complete ~~this~~ work under Part II of this Project.

~~The proposed addition of these calibers to the Remington with Products Committee action, [illegible] - July 11, 1946.~~

ml 9/11/47 -2-

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT
PROJECT NO. FD-721, PART II - ILION WORKS
CATEGORY: ESTABLISHED PRODUCT

Normal Year

	Operation Before Project No.FD-721	Operation After Project No.FD-721	Results From Project No.FD-721
Quantity	239,610	253,240	13,630
Outside Sales	$5,533,946	$5,932,046	$ 398,100
Less: Mill cost	$4,359,893	$4,514,391	$ (154,498)
Selling and administrative expense	889,807	889,807	
	$5,249,700	$5,404,198	$ (154,498)
Operative Earnings	$ 284,246	$ 527,848	$ 243,602
Less: All other expense @ 8% (excludes Federal taxes on income)			19,488
Net earnings before Federal taxes on income			$ 224,114
Less: Federal taxes on income @ 35%			78,440
Net Earnings			$ 145,674

Investment

Total appropriation requested under this project (including development).	$1,113,170
Amount included therein for manufacturing facilities subject to allocation (deducted).	401,527
Investment in facilities used directly in this operation.	490,655
Applicable service and other manufacturing facilities.	
Total Investment	$1,202,298
Working Capital	137,200
Total Capital Required	$1,339,498
Less: Portion of this project to be charged to operations (including development) or depreciation reserve.	$ 411,768
Total investment after completion of this project	$ 927,730

Return on Investment

Total capital required	10.9%
Total investment after completion of this project	15.7%

WEG/bc
9/16/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT
PROJECT NO. FD-721, PART II - ILION WORKS
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Net earnings before Federal taxes on income			$ 224,114
Less: Federal taxes on income @ 35%			78,440
Net Earnings			$ 145,674

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Amount included therein for manufacturing facilities subject to allocation (deducted).	401,527
Existing investment in facilities used directly in this operation.	1,134,825
Applicable service and other manufacturing facilities.	
Total Investment	$1,846,468
Working Capital	137,200
Total Capital Required (including facilities to be retired)	$1,983,668
Less: Investment to be retired and portion of this project to be charged to operations (including development) or depreciation reserve.	$1,055,938
Total investment after completion of this project	$ 927,730

Return on Investment

Total capital required (including facilities to be retired)	7.3%
Total investment after completion of this project	15.7%

WEG/bc
9/16/47

2nd

Project FD-721 - Part II

COMPUTATION OF GROSS PROFIT OR (LOSS)
M/720 vs. M/721-722 (8 calibers)

BASED ON NORMAL YEAR OF 12 YEAR SALES

	TOTAL LINE INCLUDING M/720	M/721-722	Difference
Quantity	239,610	253,240	13,630
Outside Sales	$ 5,533,946	$ 5,932,046	$ 398,100
Factory Costs			
Direct Material	772,377	859,878	(87,501)
Direct Labor	714,998	760,030	(45,032)
Expense			
Direct & Indirect	2,367,473	2,374,498	(7,025)
Fixed	238,412	238,412	-----
Total Expense	2,605,885	2,612,910	(7,025)
Total Factory Cost	$ 4,093,260	$ 4,232,818	$ (139,558)
Inventory Adjustment	$ 81,364	$ 84,656	$ (2,792)
Deferred Tooling Cost	184,769	196,917	(12,148)
Total Factory Cost	$ 4,359,893	$ 4,514,391	$ (154,498)
General and Administrative	$ 889,807	$ 889,807	------
Commercial Cost	$ 5,249,700	$ 5,404,198	$ (154,498)
Gross Profit or (loss)	$ 284,246	$ 527,848	$ 243,602
~~Less: Rental, Depr. & Design~~	~~(illegible)~~	~~(illegible)~~	~~(illegible)~~
~~Est. Savings Before All Other Expense & Federal Taxes~~			~~209,288~~ 224,114
Less: 8% All Other Expense			~~16,743~~ 19488
Estimated Savings Before Federal Taxes			~~192,545~~ 224114
Less: 35% Federal Income Taxes			~~67,391~~ 78440
Prospective Net Savings (Normal Year)			~~125,154~~ 145674
* Total Estimated Expenditures excluding* 401,527 equipment			711,643
Net % Return			~~17.6%~~ 20.5%
Total Estimated Expenditure including $150,000 of equipment			861,643
Net % Return			16.9%

ml 9/11/47

* This is on the basis that all equipment ordered in this project of $401,527 was of a general use and would have to be purchased on a necessity basis at a reasonably early date.

Last Sheet

Detail Estimate of Expenditure

M/721-722 (PROJECT FD-721)
~~M/721 & (Project FD-722)~~
(For Part II)

	Total Requirements to Complete	Amount Authorized	Amount Expended to 8/31/47	Balance Unexpended 8/31/47	Amount Requested This Part
Development (FD-721-1)	$ 325,295	$ 225,343	$ 265,144	$ (39,801)	$ 99,952
Design	67,810	60,985	55,799	5,186	6,825
Investigation	1,061	1,048	551	497	13
Design	15,616	15,408	14,158	1,250	208
Design Revisions	33,053	27,237	23,958	3,279	5,816
Model Making	18,080	17,292	17,132	160	788
Specifications	28,900	27,370	18,625	8,745	1,530
Testing	20,687	19,385	11,001	8,384	1,302
Specifications	8,213	7,985	7,624	361	228
Product Engineering	124,650	86,103	106,160	(20,057)	38,547
Process Engineering	94,700	68,337	84,509	(16,172)	26,363
Trial Run	29,950	17,766	21,651	(3,885)	12,184
Tooling Revisions	82,335	29,835	68,367	(38,532)	52,500
Tool Design Revisions	35,400	13,400	33,381	(19,981)	22,000
Tool Revisions	46,935	16,435	34,986	(18,551)	30,500
Administrative	21,600	21,050	16,193	4,857	550
Engineering Files	5,219	6,600	5,368	1,232	(381)
Project Engineering	15,381	14,450	10,825	3,625	931
Contingencies					
Tooling (FD-721-2)	299,875	290,201	263,399	26,802	9,674
Design	96,075	89,092	84,444	4,648	6,983
Tools	203,800	201,109	178,955	22,154	2,691
Special Machinery (FD-721-3)	---	---	---	---	---
Standard Machinery (FD-721-4)	374,527	374,527	375,465	(938)	---
Production Aids (FD-721-5)	27,000	24,819	26,507	(1,688)	2,181
Pilot Operations (FD-721-6)	86,473	58,007	74,943	(16,936)	28,466
Quality Audit	3,230	6,766	2,831	3,935	(3,536)
Methods Engineering	1,460	1,900	1,210	690	(440)
Machine Changes & Additions	10,060	4,114	5,025	(911)	5,946
Machine Rearrangement	1,900	2,690	1,932	758	(790)
Pilot Lot Manufacture	61,823	44,065	59,548	(15,483)	17,758
Tool Replacement	8,000	5,528	4,672	856	2,472
Credit for O.K. Guns	---	(7,056)	(275)	(6,781)	7,056
Total	$ 1,113,170	$ *972,897	$ 1,005,458	$ (32,561)	$ 140,273
~~Total of 1,2,3(Basis For Economics)~~	~~$ 211,643~~	~~$ 211,643~~	~~$ 204,000~~	~~$ (32,561)~~	~~$ 211,643~~

ml 9/11/47

* Includes:
FD 721 Pt I authorized for * 897,373
FD 721 Pt I " " * 75,524
Total 972,897

TABLE III

SAVINGS CALCULATION
MODEL 720 vs. MODEL 721-722

BASED ON TOTAL YEAR OF 12 YEARS SALES

	MODEL 720 Unit	MODEL 720 Total	MODEL 721 Unit	MODEL 721 Total	MODEL 722 Unit	MODEL 722 Total	M/721-722 vs. M/720 Gain or (Loss)
Quantity		2,000		11,000		3,700	12,630
Outside Sales	188.85	$377,700	$33.00	$400,640	$70.06	$214,552	$398,100
Direct Material	4.38	8,780	6.16	73,480	6.16	22,792	(87,501)
Direct Labor	18.[illegible]	37,000	5.05	60,247	5.05	18,685	(45,032)
Industrial Relations 18.8%	2.[illegible]	3,698	.79	9,[illegible]58	.79	2,915	(7,025)
Inventory Adjustment (on above) 2%	.48	958	.24	2,863	.24	888	(2,792)
Deferred Tooling Cost	8.92	17,840	1.92	22,880	1.92	7,089	(12,146)
Sub Total	34.88	68,767	14.16	168,886	14.16	52,379	(154,498)
Out of Pocket Cost	25.27	50,573	10.44	234,062	16.80	62,173	243,602
Less Development & Design Cost (1/12 of 44,768)							34,314
Est. Savings before all other expenses and Federal Taxes							209,288
Less 8% all other expense							16,743
Est. Savings before Federal Taxes							192,545
Less 35% Federal Income Taxes							67,391
Prospective Net Savings (Normal Year)							125,154
Total Estimated Expenditure							711,645
Net % Return							17.6%

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1st shot

REMINGTON ARMS COMPANY, INC.

Estimated Earnings and Return on Investment

PROJECT NO. FB-721 - Ilion WORKS

Category - Established Product

Net Earnings - Model 721	$ ~~125,134~~
Total Estimated Expenditure	~~771,643~~
Net % Return	~~16.2%~~
Appropriation Request	$ 1,~~113,170~~
~~Estimated Expenditure - Balance R & M Program~~ Investment before R&M	~~6,357,530~~ -
Total Estimated Expenditure on R & M	$ 7,470,700
~~Add: Present Investment~~	16,882,127
Total before Retirements	$ 14,352,827
Retirements & depreciation and charges to operation Working Capital	2,901,817
Grand Total	$ 17,254,644
Less: Write-off - Expenditure & Present Investment to be retired	7,074,635
Total Investment after R & M Program	$ 10,180,009
Portion of [redacted] Investment Total Applicable to Model 721-722 (before retirements)	$ 1,571,858
" " " Retirement " " " "	
Portion of Total Investment After R & M Applicable to Model 721-722	927,429
% Return on Grand Total*	7.96%
% Return on Total Investment 721-722	13.49%

*Return cannot be considered individually because of tie-in with other models.

ml 9/11/47

Portion applicable to 721-722
Investment before retirements
" " after "

BARBER - PRESALE R 0126356

TECHNICAL DEPARTMENT ARMS DEVELOPMENT PROJECT

Plant Ilion — Project No. FD-721 — No. I
Division Arms — Date of First Issue Sept. 17, 1946
Section Design and Engineering — Revised Issue No. 1 — Date Oct. 17, 1946

Proposed Expenditures (This Part) $42,704

	Dist.	Previous Parts	This Part	Total
Development	Oper."C"	$194,974	$72,091	$267,065
Tooling	P. I.	132,300	46,009	178,309
Special Mach.	Oper."B"	0	0	0
Standard Mach.	P. I.	471,838	(97,311)	374,527
Standard Mach.	Depr.	0	0	0
Production Aids	P. I.	20,059	0	20,059
Production Aids	Depr.	280	0	280
Production Aids	Oper.	4,310	0	4,310
Production Aids	Res. for Tools	170	0	170
Pilot Operations	Oper."C"	30,738	21,915	52,653
Total		$854,669	$42,704	$897,373

Plant Inc.	$569,959.52
Operations:	
Plant	$ 4,310.00
Cat. B	$ 0
Cat. C.	$319,718.00
Total Oper.	$324,028.00
Depreciation	$ 3,215.48
Res. for Tools	$ 170.00
Total	$897,373.00

Recapitulation:	This Part	Total Expenditure	Total Adjustment	Total Total
Plant Increase	$(51,302)	$572,895	*$(2,935.48)	$569,959.52
Operations	94,006	324,028		324,028.00
Depreciation	0	280	2,935.48	3,215.48
Reserve for Tools	0	170	0	170.00
Total	$ 42,704	$897,373	0	$897,373.00

* Write-off of five worn obsolete type of machines used for cutter sharpeners. (See schedule in Project FI-172.)

TITLE: MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

To be commenced on approval — H. J. Hackman (Prepared by)
To be completed April, 1947 — W. Holloway (Issued by)
This Project is - included in the approved Technical Dept. Program and Budget.

Those examining Project for information please initial.
Those examining Project for approval please sign.

Initial	Date	Signature	Date	Signature	Date
		H. A. Brown	9/17		
		G. O. Clifford	9/18		
		R. D. Jack	--		
				AUTHORIZED by the Board of Directors Sept. 27, 1946	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126356
R2527344

BARBER - PRESALE R 0126357

TECHNICAL DEPARTMENT ARMS DEVELOPMENT PROJECT

Plant Ilion — Project No. FD-721 — Part No. I
Division Arms — Date of First Issue Sept. 17, 1946
Section Design and Engineering — Revised Issue No. - — Date -

Proposed Expenditures (This Part) $43,334

	Dist.	Previous Parts	This Part	Total
Development	Oper."C"	$194,974	$ 72,091	$267,065
Tooling	P. I.	132,300	46,009	178,309
Special Mach.	Oper."B"	0	0	0
Standard Mach.	P. I.	471,208	(96,681)	374,527
Standard Mach.	Depr.	0	0	0
Production Aids	P. I.	24,819	0	24,819
Pilot Operations	Oper."C"	30,738	21,915	52,653
Total		$854,039	$ 43,334	$897,373

Plant Inc.	$577,655
Operations:	
Cat. B	$ 0
Cat. C	$317,718
Total Oper.	$317,718
Depreciation	$ 0
Total	$897,373

Recapitulation:	This Part	Total Expenditure	Total Adjustment	Total Total
Plant Increase	$(50,672)	$577,655	$ 0	$577,655
Operations	94,006	319,718	0	317,718
Depreciation	0	0	0	0
Total	$ 43,334	$897,373	$ 0	$897,373

TITLE: MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

To be commenced on approval — H. J. Heckman (Prepared by)

To be completed April, 1947 — W. Holloway (Issued by)

This Project is - included in the approved Technical Dept. Program and Budget.

Those examining Project for information please initial.
Those examining Project for approval please sign.

Initial	Date	Signature	Date	Signature	Date
				AUTHORIZED:	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126357
R2527345

PROJECT

MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

PART I

INTRODUCTION:

In order to clarify the control of expenditures and to allocate charges to the several classifications of an Arms Development project, a procedure has been compiled and approved which places the responsibility for all phases of the work in the Technical Department. This project is presented to activate this new policy and to request additional funds to complete the development of the M/721-722 rifle.

At the present time, projects totaling $854,039 have been authorized to cover the development of this arm. These are listed as follows:

FTD-151	Design & Engineering of M/721-722 Rifle	$225,712
FI-123	Tooling	132,300
FTI-5	Machinery & Equipment	424,913
FI-172	Purchase Tool Sharpening Equipment	7,800
FI-171	Purchase Tocco Induction Heating Unit	12,225
FI-173	Cuprodine & Deplate Facilities	6,270
FI-160	Additional Equipment for M/721 Production	20,000
FI-180	Material Handling Equipment	21,000
FI-178	Purchase Comparator	3,819
Total		$854,039

Funds provided by these projects have been reallocated to the proposed project FD-721 and distributed as follows:

FD-721-1	Development	$194,974
FD-721-2	Tooling	132,300
FD-721-3	Special Machinery	0
FD-721-4	Standard Machinery	471,208
FD-721-5	Production Aids	24,819
FD-721-6	Pilot Operations	30,738
Total		$854,039

Allocation of these funds in accordance with the procedure has been made as indicated by Table I attached. A survey of the estimated requirements to complete the development of this arm in the

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

five calibers now planned, namely, .300 H & H Magnum, .300 Savage, .30-06 Springfield, .257 Rem. Roberts and .270 Winchester, indicates the need for an additional $43,334.

This increase over previous estimates has been caused, in part, by each of the following:

1. The M/721 being the first of the new guns on the Development Program has absorbed considerable excess expense due to lack of experience in the application of new types of machines and methods and has covered much of the expense of setting up procedures and methods of operation which will ultimately benefit succeeding models.
2. The initial shipments of purchased parts from outside vendors have resulted in a rather high rate of rejections, necessitating additional Technical assistance to obtain the required quality.
3. Many items of expense not previously charged to the development of a new model and not contemplated in past estimates have now been properly included in this project.

   In addition to the increased development cost, a check of raw material, purchased part and labor costs indicates further increases in these categories, all having an adverse effect on the economics of the arm. A re-evaluation using all latest information reduces the Net Return on the Expenditure for the average year from 40.6% to 22.7%.

DESCRIPTION OF PROPOSED WORK:

It is proposed to complete the development work for the five calibers listed above in accordance with the attached schedule. It was originally intended that the .220 Swift and the .22 Hornet would be included in this model, but the cost to make the necessary changes to adapt these cartridges to the M/721 did not appear justified.

Consideration is now being given to three other calibers: namely, the .280 Remington, the .224 Remington and the .222 Remington. The cost and economics of including these cartridges in the model will be presented in a Part II to this project.

COST OF PROPOSED WORK:

Funds requested herewith constitute estimated requirements to complete the development of this arm, in addition to funds already authorized. Additional authorization required to complete the five calibers is estimated at $43,334, to be allocated as indicated in Table I attached hereto.

The expenditure forecasted in the 1946 Arms Division Budget to cover Development and Pilot Operations only was $171,004. Under this project, requirements for the same activities to be performed during the year 1946 amount to $206,151, exceeding the budget by $35,147.

PATENT SITUATION:

A survey of the pertinent classes of patents indicates no infringement or probable patentable novelty.

REMARKS:

It will be noted from Table I that an additional $43,334 is required to complete the five calibers in this arm. However, the

classifications on which the economics are based have been increased by $140,015. This reduction in the overall authorization requirements is caused by an underrun of $96,681 in the Standard Machinery category.

A comparison of the funds provided by the R & M re-estimate of 5/1/56 and those now required for the Development, Tooling, Special Machinery and Pilot Operations shows an increase of approximately $140,000. No direct comparison by individual models can be made in the Standard Machinery category. However, a recent check estimate of the total funds required for new machinery indicates no reduction in the overall funds required. Therefore, it is believed this request will exceed the R & M re-estimate by approximately $140,000.

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KINZER V. REMINGTON

BARBER - PRESALE R 0126362

(For Part)

	Total Requirements to Complete	Amount Authorized	Amount Expended to September 10, 1946	Balance Unexpended September 10, 1946	Amount Requested
Development (FD-721-1)	$267,065	$192,97[illegible]	$201,397	$(9,423)	$ 72,091
Design	16,175	14,1[illegible]	13,175	(2,020)	7,020
Investigation	538	[illegible]	538	(5)	57
Design	13,008	12,[illegible]	13,008	(599)	598
Design Revisions	20,737	13,6[illegible]	16,037	(2,365)	7,065
Model Making	13,892	11,[illegible]	13,592	948	(648)
Specifications	18,970	20,9[illegible]	15,180	5,817	(2,027)
Testing	11,685	10,3[illegible]	8,815	1,490	1,380
Specifications	7,285	10,6[illegible]	6,365	4,327	(3,407)
Product Engineering	78,453	47,8[illegible]	54,930	(7,128)	30,591
Process Engineering	61,937	41,8[illegible]	49,945	(8,083)	20,075
Trial Run	16,516	6,000	5,045	955	10,516
Tool Design	105,517	82,7[illegible]	84,778	(2,018)	22,757
Tool Design	73,017	70,2[illegible]	76,578	(6,318)	7,757
Tool Design Revisions	12,500	[illegible]	6,455	(6,455)	0
Tool Revisions	15,000	0	1,745	(1,745)	15,000
Administrative	15,950	2,2[illegible]	6,274	(4,074)	13,750
Engineering Files	5,700	2,2[illegible]	3,021	(821)	3,500
Project Engineering	10,250	0	3,250	(3,250)	10,250
Contingencies	0	0	0	0	0
Tooling (FD-721-2)	178,309	132,[illegible]	142,809	(10,509)	46,009
Special Machinery (FD-721-3)	0	0	0	0	0
Standard Machinery (FD-721-4)	374,527	171,[illegible]	338,222	132,986	(96,681)
Production Aids (FD-721-5)	24,819	[illegible]	17,398	7,421	0
Pilot Operations (FD-721-6)	52,653	30,[illegible]	23,024	8,714	21,915
Quality Audit	6,366	[illegible]	1,416	(1,416)	6,366
Methods Engineering	1,650	[illegible]	0	0	1,650
Machine Changes & Additions	4,114	[illegible]	0	0	4,114
Machine Rearrangement	2,690	[illegible]	534	(534)	2,690
Pilot Lot Manufacture	38,715	30,[illegible]	19,046	10,892	7,977
Tool Replacement	3,528	[illegible]	228	(228)	3,528
Credit for OK Guns	(4,410)	[illegible]	0	0	(4,410)
Total	$897,373	$[illegible]	$721,850	$129,199	$ 43,334
Total of 1, 2, 3, & 6 (Basis for Economics)	$498,027	$[illegible]	$367,830	$(11,218)	$140,015

W.H. 9/11/46

R2527350

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TABLE II
COMPUTATION OF GROSS PROFIT OR LOSS
MODEL 720 VS. MODEL 721-722
(1947-1958 INCLUSIVE)

	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	12 Year Total 1947-1958	3rd Post War Year 1947	4th Post War Year 1948	5th Post War Year 1949	Normal Post War Year 1950	1951-1958	12 Year Total 1947-1958	Difference
Quantity	303,300	321,655	219,055	217,150	1,737,200	2,828,360	320,250	338,455	260,355	228,950	1,831,600	2,979,610	151,250
Outside Sales	$6,453,853	$7,054,934	$5,422,762	$4,650,205	$37,201,640	$60,783,394	$6,823,842	$7,441,082	$5,673,653	$4,927,701	$39,421,608	$64,287,866	$3,504,472
Factory Costs:													
Direct Material	456,277	740,136	562,866	513,604	4,108,832	6,383,715	559,364	838,080	629,767	581,670	4,653,360	7,262,241	878,526
Direct Labor	1,211,171	1,060,770	818,614	599,088	4,792,704	8,482,347	1,212,986	1,072,154	821,905	610,194	4,881,552	8,598,773	116,426
Expense - Direct & Indirect	2,517,839	2,209,793	2,011,984	1,998,816	15,990,528	24,728,960	2,548,117	2,211,558	2,012,194	2,000,538	16,004,304	24,777,011	18,051
Fixed Expense	268,982	285,052	271,829	252,816	2,022,528	3,101,207	268,982	285,052	271,829	252,816	2,022,528	3,101,207	---
Total Expense	2,816,821	2,494,845	2,283,813	2,251,632	18,013,056	27,860,167	2,817,099	2,496,610	2,284,323	2,253,354	18,026,832	27,878,218	18,051
Total	4,486,269	4,295,751	3,665,293	3,364,324	26,911,592	42,726,229	4,589,431	4,406,844	3,735,995	3,445,218	27,561,744	43,739,232	1,013,003
Inventory Adjustment	134,588	128,873	109,959	67,286	538,288	978,994	137,683	132,205	112,080	68,904	551,232	1,002,104	23,110
Deferred Tooling Cost	231,500	176,619	120,018	107,137	857,096	1,492,370	220,541	171,675	115,002	105,581	844,648	1,456,447	(35,923)
Factory Cost	4,852,357	4,601,243	3,895,270	3,538,747	28,309,976	46,197,593	4,947,655	4,710,724	3,962,077	3,619,703	28,957,624	46,197,783	1,000,190
General & Administrative	1,023,576	1,116,159	858,559	746,667	5,973,336	9,718,297	1,023,576	1,116,159	858,559	746,667	5,973,336	9,718,297	---
Commercial Costs	5,875,933	5,717,402	4,753,829	4,285,414	34,283,312	55,915,890	5,971,231	5,826,883	4,820,636	4,366,370	34,930,960	55,916,080	1,000,190
Profit (or Loss)	$ 577,920	$1,337,532	$ 668,933	$364,791	$2,918,328	$5,867,504	$852,611	$1,614,179	$853,017	$561,331	$ 4,490,648	$8,371,786	$2,504,282

Twelve Years Including Amortization of Development and Design Cost.		Normal Year Savings
Gross Savings (Before Development & Design Costs)	$2,504,282	$196,540
Less Development and Design Cost	319,718	26,643
Gross Savings (After Development and Design Costs)	2,184,564	169,897
Less 4.6% Undistributed Expense	100,490	7,915
Net Savings (Before Federal Taxes	2,084,074	162,082
Less 35% Federal Taxes	729,426	56,729
Net Savings - 12 Years	1,354,648	
Net Savings - Average Year	112,887	105,353
Total Expenditure	$ 498,027	$498,027
Net % Return on Expenditure	22.7%	21.2%

BARBER - PRESALE R 012636
R2527351

TABLE III

SAVINGS CALCULATION

MODEL 720 VS. MODEL 721-722

Based on Normal Year of 12-Year Calculation

	MODEL 720 UNIT	MODEL 720 TOTAL	MODEL 721-722 UNIT	MODEL 721-722 TOTAL	M/721-722 vs. M/720 GAIN OR(LOSS)
Quantity		2,000		13,800	11,800
Outside Sales	$53.21	$106,420	$27.82	$383,916	$ 277,496
Direct Material	2.33	4,660	5.27	72,726	(68,066)
Direct Labor	15.63	31,260	3.07	42,366	(11,106)
Industrial Relations	2.42	4,845	.48	6,567	(1,722)
Inv. Adj. (On Above)	.41	815	.17	2,433	(1,618)
Deferred Tool Cost	8.92	17,840	1.18	16,284	1,556
Sub-Total	$29.71	$ 59,420	$10.17	$140,376	$ (80,956)
Out-of-Pocket Gain	$23.50	$ 47,000	$17.65	$243,540	$ 196,540*

Less: Development & Design Cost (1/12 x $319,718)	26,643
	$ 169,897
Less: All Other Expenses (4.6%)	7,815
Prospective Savings (before Federal Income Taxes)	$ 162,082
Less: Federal Income Taxes (35%)	56,729
Prospective Net Savings	$ 105,353
Estimated Total Expenditure	$ 498,027
% Net Return on Expenditure	21.2%

* Increase in Gross Profit of Normal Year of computation of Gross Profit or Loss, M/720 vs. M/721-722 (Table II)

Overall Line Normal Year Gain including M/721-722	$ 561,331
Overall Line Normal Year Gain including M/720	$ 364,791
Gain	$ 196,540

9/17/46

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

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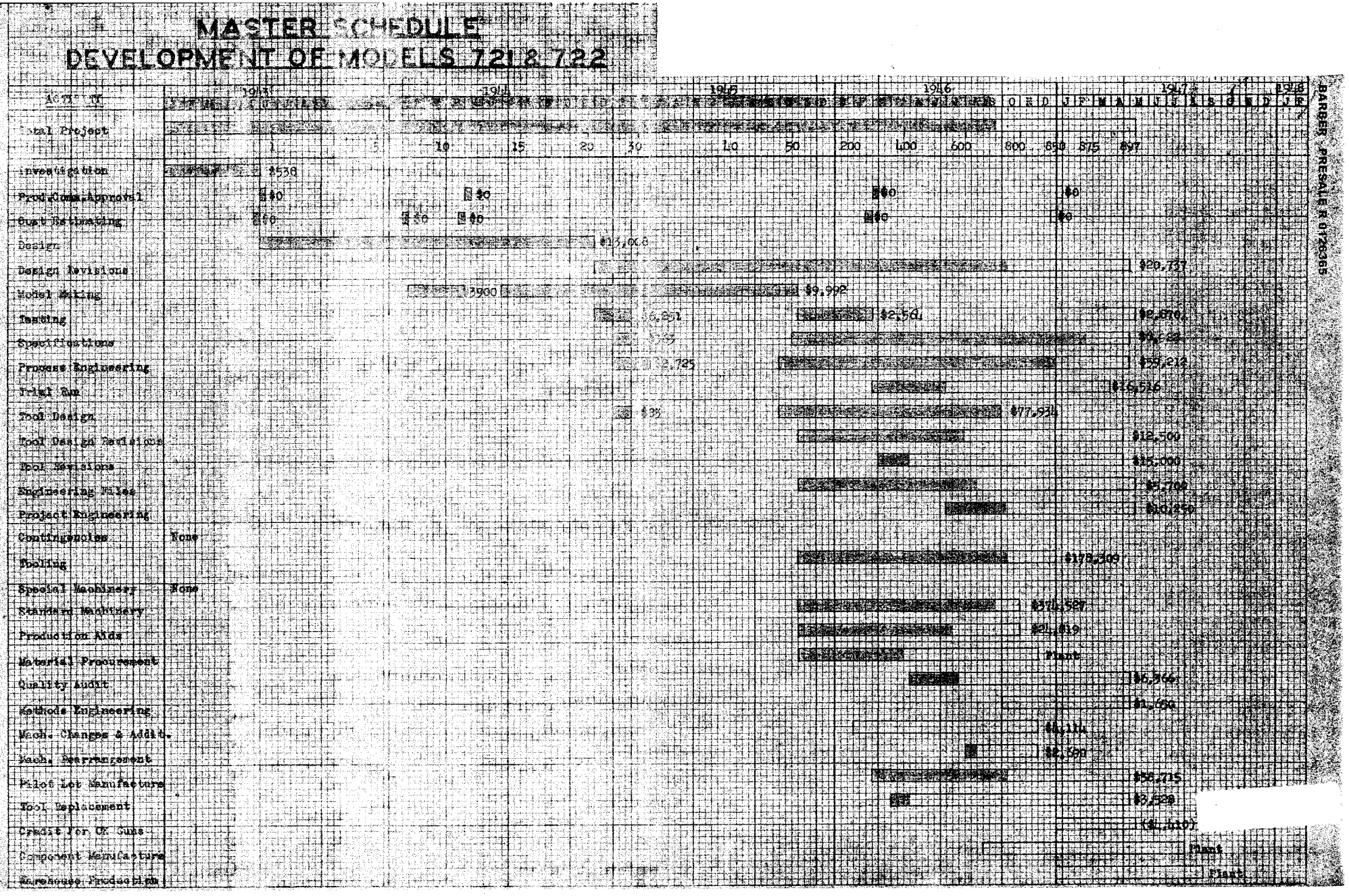
KINZER V. REMINGTON

MASTER SCHEDULE
DEVELOPMENT OF MODELS 721 & 722



BARBER - PRESALE R 0126365
R2527353
BARBER - PRESALE R 0126365

DATE: 11-25-46

MODEL 721-722

	START	COMPLETE
1. PRODUCT DESIGN	6-1-43	7-11-46 (Frozen)
2. ENGINEERING	10-1-45	1-1-47
3. MACHINERY PROCUREMENT	11-1-45	11-1-46
4. RAW MATERIAL PROCUREMENT	11-1-45	12-1-46
5. TOOLING PROCUREMENT	11-1-45	1-1-47
6. COMPONENT PROCUREMENT	11-1-45	1-1-47
7. PILOT LOT	5-1-46	2-1-47
8. COMPONENT PRODUCTION	9-1-46	Continuing
9. COMPONENT PRODUCTION TIME	4 Mos.	
10. WAREHOUSE PRODUCTION	2-1-47	Continuing
11. ASSEMBLY FOR WAREHOUSE STOCK	4 Mos.	
12. WAREHOUSE STOCK (4150 Guns)		6-1-47
13. ANNOUNCEMENT		2-1-47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126367

MODEL 721 BOLT ACTION HIGH POWER RIFLE - SCHEDULE

DESIGN

SPEC. & DETAIL

PROD. ENG'RG.

TOOL DESIGN

PROJECT ENG'R.

DEVELOPMENT

TOOLING

SPEC. MACHINES — NONE

STD MACHINES

PROD'N. AIDS

TRIAL RUN & PILOT LOT

M'TRL. PROCUREMENT — Continuing

COMPONENT PROCUREMENT — Continuing

COMPONENT PRODUCTION — Continuing

WAREHOUSE PRODUCTION

WAREHOUSE STOCK JUNE 1, 1947 (4150 Guns)

ANNOUNCEMENT JAN. 1, 1947

REPLACED MODEL: M/720. This Gun has not been in production during 1945 or 1946.

1946 1947 1948 1949 1950

LEGEND

Solid Bar - Fundamental Work
Cross Bar - Participation Work

Frozen Design - Complete - July 11, 1946
Fundamental Development - Complete - Aug. 1, 1946
Tooling Available - Complete - Dec. 1, 1946
Special Machinery Available - Complete - None
Standard Machinery Available - Complete - June 1, 1946
Production Aids Available - Complete - Jan. 1, 1947
Material Procurement - Complete - Dec. 1, 1946

Trial Run and Pilot Run - Complete - Feb. 1, 1947
Component Production - Starts - Sept. 1, 1946
Production Assembly - Starts - Feb. 1, 1947

Component Processing Time - Four Months
Component Procurement Time - Fourteen Months
Assemble for Warehouse Stock - Four Months
Warehouse Stock Available (4150 Guns) June 1, 1947
Announcement Date - Jan. 1, 1947

BARBER - PRESALE R 0126367
R2527355

BARBER - PRESALE R 0126368

TECHNICAL DEPARTMENT ARMS DEVELOPMENT PROJECT

Plant Ilion — Project No. FD-721 Part No. I
Division Arms — Date of First Issue Sept. 17, 1946
Section Design and Engineering — Revised Issue No. - Date -

Proposed Expenditures (This Part) $43,334

	Dist.	Previous Parts	This Part	Total		
Development	Oper."C"	$194,974	$72,091	$267,065	Plant Inc.	$577,655
Tooling	P. I.	132,300	46,009	178,309	Operations:	
Special Mach.	Oper."B"	0	0	0	Cat. B	$ 0
Standard Mach.	P. I.	471,208	(96,681)	374,527	Cat. C	$319,718
Standard Mach.	Depr.	0	0	0	Total Oper.	$319,718
Production Aids	P. I.	24,819	0	24,819	Depreciation	$ 0
Pilot Operations	Oper."C"	30,738	21,915	52,653	Total	$897,373
Total		$854,039	$43,334	$897,373		

Recapitulation:	This Part	Total		
		Expenditure	Adjustment	Total
Plant Increase	$(50,672)	$577,655	$ 0	$577,655
Operations	94,006	319,718	0	319,718
Depreciation	0	0	0	0
Total	$ 43,334	$897,373	$ 0	$897,373

TITLE: MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

To be commenced on approval — H. J. Hackman (Prepared by)
To be completed April, 1947 — W. Holloway (Issued by)

This Project is - included in the approved Technical Dept. Program and Budget.

Those examining Project for information please initial.
Those examining Project for approval please sign.

Initial	Date	Signature	Date	Signature	Date
		H. A. Brown	9/17	R. H. Colman	
		R. W. Hughes	9/17	D. F. Carpenter	
		H. K. Faulkner	9/17		
		H. N. Meixner	9/18		
		A. J. Greene	9/18		
		G. O. Clifford	9/18	AUTHORIZED by the	
		R. D. Jack	--	Board of Directors	
		M. R. Warden	--	SEP 27 1946	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126368
R2527356

PROJECT

MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

PART I

INTRODUCTION:

In order to clarify the control of expenditures and to allocate charges to the several classifications of an Arms Development project, it has been decided to consolidate the various projects for engineering, development, tooling, equipment, etc., into one appropriation request with sub-accounts for the various types of charges. This project is presented to activate this new policy and to request additional funds to complete the development of the M/721-722 rifle.

At the present time, projects totaling $854,039 have been authorized to cover the development of this arm. These are listed as follows:

FTD-151	Design & Engineering of M/721-722 Rifle	$225,712
FI-123	Tooling	132,300
FTI-5	Machinery & Equipment	424,913
FI-172	Purchase Tool Sharpening Equipment	7,800
FI-171	Purchase Tocco Induction Heating Unit	12,225
FI-173	Cuprodine & Deplate Facilities	6,270
FI-160	Additional Equipment for M/721 Production	20,000
FI-180	Material Handling Equipment	21,000
FI-178	Purchase Comparator	2,819
	Total	$854,039

Funds provided by these projects have been reallocated to the proposed project FD-721 and distributed as follows:

FD-721-1	Development	$194,974
FD-721-2	Tooling	132,300
FD-721-3	Special Machinery	0
FD-721-4	Standard Machinery	471,208
FD-721-5	Production Aids	24,819
FD-721-6	Pilot Operations	30,738
	Total	$854,039

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Allocation of these funds in accordance with the procedure has been made as indicated by Table I attached. A survey of the estimated requirements to complete the development of this arm in the five calibers now planned, namely, .300 H & H Magnum, .300 Savage, .30-06 Springfield, .257 Rem. Roberts and .270 Winchester, indicates the need for an additional $43,334.

This increase over previous estimates has been caused, in part, by each of the following:

1. The M/721 being the first of the new guns on the Development Program has absorbed considerable excess expense due to lack of experience in the application of new types of machines and methods and has covered much of the expense of setting up procedures and methods of operation which will ultimately benefit succeeding models.
2. The initial shipments of purchased parts from outside vendors have resulted in a rather high rate of rejections, necessitating additional Technical assistance to obtain the required quality.
3. Many items of expense not previously charged to the development of a new model and not contemplated in past estimates have now been properly included in this project.

In addition to the increased development cost, a check of raw material, purchased part and labor costs indicates further increases in these categories, all having an adverse effect on the economics of the arm. The economics were previously calcu-

lated on a forecast of 15,000 guns per normal year, which was based upon supplying seven calibers. It was later found that two of the proposed calibers, the 220 Swift and the 22 Hornet, could not be accommodated in the proposed design. The forecast has accordingly been reduced to 13,800 guns. A re-evaluation using all latest information reduces the Net Return on the Expenditure for the average year from 40.6% to 22.7%.

DESCRIPTION OF PROPOSED WORK:

It is proposed to complete the development work for the five calibers listed above in accordance with the attached schedule.

Consideration is now being given to three other calibers: namely, the .280 Remington, the .224 Remington and the .222 Remington. The cost and economics of including these cartridges in the model will be presented in a Part II to this project.

COST OF PROPOSED WORK:

Funds requested herewith constitute estimated requirements to complete the development of this arm, in addition to funds already authorized. Additional authorization required to complete the five calibers is estimated at $43,334, to be allocated as indicated in Table I attached hereto.

The expenditure forecasted in the 1946 Research Budget to cover Development and Pilot Operations only was $171,004. Under this project, requirements for the same activities to be performed during the year 1946 amount to $206,151. Unless compensating decreases in other items offset this, the budget expenditures may be exceeded by $35,147.

PATENT SITUATION:

A survey of the pertinent classes of patents indicates no infringement or probable patentable novelty.

REMARKS:

It will be noted from Table I that a total additional authorization of $43,334 is required to complete the five calibers in this arm. The engineering and development expenditures are increased by $140,015, while an underrun of $96,681 is anticipated in the Standard Machinery category. Since standard machines are used for other models as well as this one, their cost has not been charged against the individual model, and return on expenditure is calculated against engineering and development items only.

A comparison of the funds provided by the R & M re-estimate of 5/1/46 and those now required for the Development, Tooling, Special Machinery and Pilot Operations shows an increase of approximately $140,000. No direct comparison by individual models can be made in the Standard Machinery category. However, a recent check estimate of the total funds required for new machinery indicates no reduction in the overall funds required. Therefore, it is believed this request will exceed the R & M re-estimate by approximately $140,000.

TABLE III

SAVINGS CALCULATION

MODEL 720 VS. MODEL 721-722

Based on Normal Year of 12-Year Calculation

	MODEL 720 UNIT	MODEL 720 TOTAL	MODEL 721-722 UNIT	MODEL 721-722 TOTAL	M/721-722 vs. M/720 GAIN OR(LOSS)
Quantity		2,000		13,800	11,800
Outside Sales	$53.21	$106,420	$27.82	$383,916	$ 277,496
Direct Material	2.33	4,660	5.27	72,726	(68,066)
Direct Labor	15.63	31,260	3.07	42,366	(11,106)
Industrial Relations	2.42	4,845	.48	6,567	(1,722)
Inv. Adj. (On Above)	.41	815	.17	2,433	(1,618)
Deferred Tool Cost	8.92	17,840	1.18	16,284	1,556
Sub-Total	$29.71	$ 59,420	$10.17	$140,376	$ (80,956)
Out-of-Pocket Gain	$23.50	$ 47,000	$17.65	$243,540	$ 196,540*

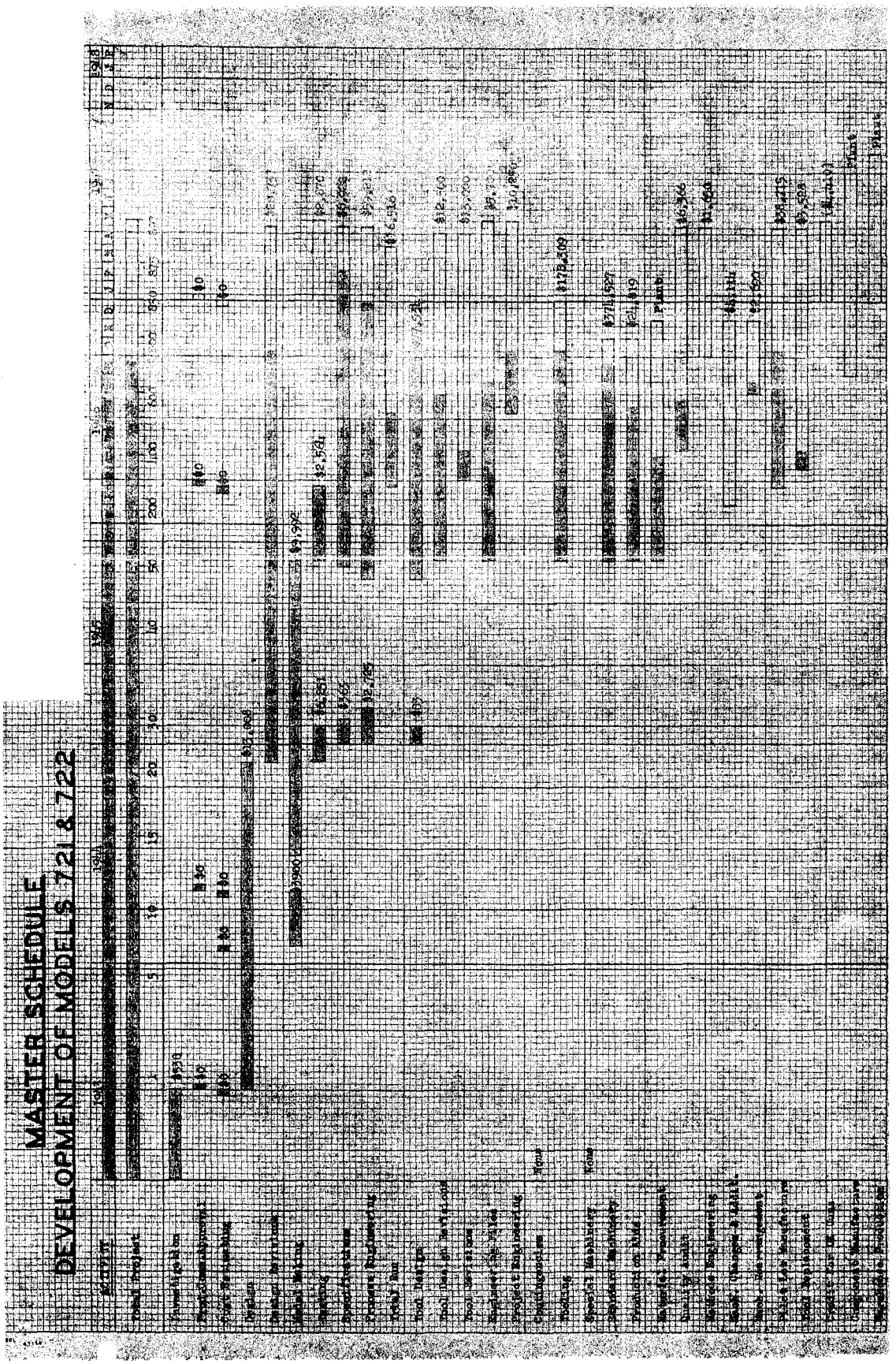
Less: Development & Design Cost (1/12 x $319,718)	26,643
	$ 169,897
Less: All Other Expenses (4.6%)	7,815
Prospective Savings (before Federal Income Taxes)	$ 162,082
Less: Federal Income Taxes (35%)	56,729
Prospective Net Savings	$ 105,353
Estimated Total Expenditure	$ 498,027
% Net Return on Expenditure	21.2%

* Increase in Gross Profit of Normal Year of computation of Gross Profit or Loss, M/720 vs. M/721-722 (Table II)

Overall Line Normal Year Gain including M/721-722	$ 561,331
Overall Line Normal Year Gain including M/720	$ 364,791
Gain	$ 196,540

9/17/46

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON


MASTER SCHEDULE
DEVELOPMENT OF MODELS 721 & 722

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-6

PART I

TITLE MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE DATE 10-22-46

1. Description of Proposed Work:

To cover work incidental to Pilot Operations, including Quality Audit, Methods Engineering, Machine Changes and Additions, Machine Rearrangement, Pilot Lot Manufacture, Tool Replacement, and Credit for O. K. Guns and Components, as described in Project FD-721 dated 9-17-46.

2. Estimated Cost:

	Labor	Material
	$52,653	

Total Previously Auth. _____

This Request $52,653

Est. Cost to Complete _____

Total

Requested by H. J. Hackman

Approved

Authorized _____

Date _____

BARBER - PRESALE R 0126376

Form RT-115

CC: J. P. Bilgren
G. W. Radley
J. J. Phillips
Att: G. H. Jordon
R. W. Steel
J. Roberts

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-6

PART II

TITLE Model 721-722 Bolt Action High Power Center Fire Rifle DATE 10/9/47

1. Description of Proposed Work:

To cover work incidental to Pilot Operations, including Quality Audit, ~~Methods Engineering~~, Machine Changes and Additions, Machine Rearrangement, Pilot Lot Manufacture, and Tool Replacement, as described in FD-721, Part II Authorized September 26, 1947.

2. Estimated Cost: $86, 473.

	Labor	Material
Total Previously Auth.	$ 52, 653.	
This Request	33,820.	
Est. Cost to Complete	86,473.	
Total	$ 86,473.	

Requested by [signature] 10/10/47

Approved [signature]

[signature]

Authorized [signature]

Date 10/12/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126376
R2527364

BARBER - PRESALE R 0126377

Form RT-115

CC: R. W. Steele
J. P. Bilgren
G. W. Radley
J. J. Phillips) In
G. H. Jordan) Turn
J. A. Roberts

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-6

PART III

TITLE M/721-722 Bolt Action High Power Center Fire Rifle DATE 6/10/48

1. Description of Proposed Work:

To cover work incidental to Pilot Operations, including Quality Audit, Machine Changes & Additions, Machine Rearrangement, Pilot Lot Manufacture, and Tool Replacement, as described in FD-721, Part III authorized 4/30/48.

2. Estimated Cost: $ 83,973.

	Labor	Material
Total Previously Auth.	$ 86,473.	
This Request	(2,500.)	
Est. Cost to Complete	83,973.	
Total	$ 83,973.	

Requested by [signature]

Approved [signature]

[signature]

[signature]

Authorized _____

Date _____

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126377

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-5

PART I

TITLE MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE DATE 10-22-46

1. Description of Proposed Work:

To provide Production Aids, as described in Project FD-721 dated 9-17-46.

2. Estimated Cost:

	Labor	Material
	$24,819	

Total Previously Auth. _____

This Request $24,819

Est. Cost to Complete _____

Total

Requested by H. J. Hackman

Approved _____

_____

_____

Authorized _____

Date _____

BARBER - PRESALE R 0126379

Form RT-115

CC: J. P. Bilgren
G. W. Radley
J. J. Phillips
Att: G. H. Jordon
R. W. Steel
J. Roberts

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-5

PART II

TITLE Model 721-722 Bolt Action High Power Center Fire Rifle DATE 10/9/47

1. Description of Proposed Work:

To provide Production Aids, a s described in Project FD-721 including Part II authorized September 26, 1947.

2. Estimated Cost: $ 27,000.

	Labor	Material

Total Previously Auth.	$ 24,819.
This Request	2,181.
Est. Cost to Complete	27,000.
Total	$ 27,000.

Requested by [signature] 10/4/47

Approved [signature]

[signature]

Authorized [signature]

Date 10/4/47.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126379
R2527367

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-4

PART I

TITLE MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE DATE 10-22-46

1. Description of Proposed Work:

To provide Standard Machinery, as described in Project FD-721 dated 9-17-46.

2. Estimated Cost:

	Labor	Material
	$374,527	

Total Previously Auth. _____

This Request $374,527

Est. Cost to Complete _____

Total

Requested by R. J. Lackman

Approved

Authorized _____

Date _____

BARBER - PRESALE R 0126381

Form RT-115

cc: J. F. Ellgren
G. W. Hadley
J. J. Phillips
Att: G. H. Jordon
R. W. Steel
J. Roberts

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-2

PART II

TITLE Model 721-722 Bolt Action High Power Center Fire Rifle DATE 10/9/47

1. Description of Proposed Work:

To provide Tooling, including Tool Design as described in Project FD-721 and Part II authorized 9/26/47.

2. Estimated Cost: $ 299,875.

	Labor	Material
Total Previously Auth.	$ 178,309.	
This Request	121,566.	
Est. Cost to Complete	299,875.	
Total	$ 299,875.	

Requested by [signature] 10/9/47

Approved [signature]

[signature]

Authorized [signature]

Date 10/7/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126381
R2527369

BARBER - PRESALE R 0126382

Form RT-115

CC: R. W. Steele
J. P. Bilgren
G. W. Radley
J. J. Phillips) In
G. H. Jordan) Turn
J. A. Roberts

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-2

PART III

TITLE M/721-722 Bolt Action High Power Center Fire Rifle DATE 6/10/48

1. Description of Proposed Work:

To provide Tooling, including Tool Design as described in Project FD-721 including Part III as authorized 4/30/48.

2. Estimated Cost: $ 292,875.

	Labor	Material
Total Previously Auth.	$ 299,875.	
This Request	(7,000.)	
Est. Cost to Complete	292,875.	
Total	$ 292,875.	

Requested by

Approved

Authorized

Date

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126382
R2527370

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-2

PART I

TITLE MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE DATE 10-22-46

1. Description of Proposed Work:

To provide Tooling, as described in Project FD-721 dated 9-17-46.

2. Estimated Cost:

	Labor	Material
	$178,309	

Total Previously Auth. _____

This Request $178,309

Est. Cost to Complete _____

Total

Requested by H. J. Hackman

Approved

Authorized _____

Date _____

BARBER - PRESALE R 0126384

CC: R. W. Steele
J. P. Bilgren
G. W. Radley
J. J. Phillips) In
G. H. Jordan) Turn
J. A. Roberts

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-1

PART III

TITLE M/721-722 Bolt Action High Power Center Fire Rifle DATE 6/10/48

1. Description of Proposed Work:

To cover work incidental to Development, including Design, Specifications, Product Engineering, Tooling Revisions, and Administration including extra calibers but excluding Tool Design as described in Project FD-721 including Part III as authorized April 30, 1948.

2. Estimated Cost $317,625.

	Labor	Material
Total Previously Auth.	$ 325,295.	
This Request	(7,670.)	
Est. Cost to Complete	317,625.	
Total	$ 317,625.	

Requested by

Approved

Authorized

Date

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126384
R2527372

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-1

PART I

TITLE MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE DATE 10-22-46

1. Description of Proposed Work:

To cover work incidental to Development, including Design, Specifications, Product Engineering, Tool Design, and Administration, as described in Project FD-721 dated 9-17-46.

2. Estimated Cost:

	Labor	Material
	$267,065	

Total Previously Auth. _____

This Request $267,065

Est. Cost to Complete _____

Total

Requested by H. J. Backman

Approved

Authorized _____

Date _____

BARBER - PRESALE R 0126386

CC: J. P. Bilgren
G. W. Radley
J. J. Phillips
Att: G. H. Jerden
R. W. Steel
J. Roberts
File

Form RT-115

ARMS DEVELOPMENT

MASTER WORK ORDER

MODEL 721 NO. FD-721-1

PART II

TITLE Model 721-722 Bolt Action High Power Center Fire Rifle DATE 10/9/47

1. Description of Proposed Work:

To cover work incidental to Development, including Design, Specifications, Product Engineering, Tooling Revisions, and Administration including extra calibers but excluding Tool Design as described in Project FD-721 including Part II as authorized 9/26/47.

2. Estimated Cost: $ 325,295.

	Labor	Material
Total Previously Auth.	$ 267,065.	
This Request	58,230.	
Est. Cost to Complete	325,295.	
Total	$ 325,295.	

Requested by [signature] 10/4/47

Approved [signature]

Authorized [signature]

Date 10/4/47

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126386
R2527374

M193 - .300 Sav Pilot Line Test

[illegible] Iris) In
H. [illegible] rown) Lum
[illegible] Dent
M. [illegible] Pendamer
[illegible] M. Grace
R. J. [illegible] n
[illegible]
M. H. [illegible] r
[illegible] t

[illegible] 13, 1948

[illegible]

[illegible] to interest [illegible] tion and [illegible] rifle in the [illegible] [illegible] shoot [illegible] [illegible] performance [illegible] rifles tested as standard [illegible].

[illegible]

[illegible] tabulated, [illegible] [illegible] follows:

[illegible]	[illegible]
.25437	[illegible]
.25418	3.3—
.25361	[illegible]
.25397 (.in ar [illegible] Cam.)	[illegible] (1[illegible] rounds)
"	4.1 (10.6 rounds)
33[illegible]	[illegible]
.2[illegible]	3.78
.25347	1.94
.25412	[illegible]

[illegible] conditions [illegible] the [illegible] [illegible] as follows:

Ammunition: Lot [illegible], [illegible] gr. [illegible], [illegible] bullet.
Range: 100 yards [illegible] Power [illegible] [illegible], [illegible] west.
Shooters: M. M. [illegible] [illegible] [illegible]
Target - 12 shot target [illegible] shoot[illegible].
Weather - [illegible], [illegible] wind.

In [illegible] of the targets it was [illegible] [illegible] [illegible]

-2-

[illegible] column.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	.3[illegible]	[illegible]	.[illegible]7	.[illegible]	.[illegible]	.[illegible]77	.[illegible]	.[illegible]7[illegible]
[illegible]	.[illegible]5	.3[illegible]1	.3[illegible]2	.[illegible]	.3[illegible]	.[illegible]87	.[illegible]84	.[illegible]85
[illegible]	.[illegible]8[illegible]	.[illegible]80	.[illegible]8[illegible]	.[illegible]	.[illegible]	.[illegible]8[illegible]	.3[illegible]7	.[illegible]8[illegible]
[illegible]	.[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
[illegible]	.[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
5	.3[illegible]7	.3[illegible]84	.3[illegible]7[illegible]	.[illegible]88	.3[illegible]8[illegible]	.[illegible]8[illegible]4	.3[illegible]81	.[illegible]8[illegible]3
6	.[illegible]8[illegible]0	.3[illegible]84	.3[illegible]7[illegible]	.3[illegible]8[illegible]	.[illegible]	.3[illegible]84	.3[illegible]8[illegible]	.[illegible]
7	.3[illegible]	.[illegible]	.[illegible]7[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]
8	.[illegible]8[illegible]	.3[illegible]8[illegible]	.[illegible]87	.3[illegible]7	.[illegible]	.[illegible]	.[illegible]	.3[illegible]8[illegible]
[illegible]	.3[illegible]	.[illegible]8[illegible]	.[illegible]87	.3[illegible]87	.[illegible]	.[illegible]	.[illegible]	.[illegible]8[illegible]
[illegible]	.[illegible]	.[illegible]	.[illegible]87	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]
[illegible]	.[illegible]7[illegible]	.[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
[illegible]	.[illegible]	.[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]
[illegible]	.[illegible]	.[illegible]8[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]
[illegible]	.[illegible]7[illegible]	.[illegible]8[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
1[illegible]	.3079	.3084	.3078	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
1[illegible]	.[illegible]87[illegible]	.[illegible]8[illegible]	.3[illegible]7[illegible]	.[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
1[illegible]	.[illegible]87[illegible]	.3[illegible]84	.3[illegible]87[illegible]	.3[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
17	.3[illegible]7[illegible]	.[illegible]8[illegible]	.[illegible]87[illegible]	.3[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
18	.3078	.3085	.3078	.3[illegible]87	.3[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
19	.3078	.3085	.3[illegible]7[illegible]	.3[illegible]87	.3[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
20	.3078	.3085	.3[illegible]7[illegible]	.3[illegible]87	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]
21	.3078	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.[illegible]8[illegible]	.3084

[illegible]tional

[illegible] [illegible] [illegible] [

[illegible] irst lot rounds show [illegible] malfunctions [illegible] failures to fire. [illegible] fire [illegible] cartridges in the [illegible] [illegible] in [illegible], retarding the overall acceleration [illegible] [illegible] ment of the cartridge. This condition could be serious by causing [illegible] ng fire. In the firing of lot rounds it was noted that fire [illegible] [illegible] lued retruded primers and that the retruded primers were within [illegible] of the bottom of the bolt head, preventing ejection. It is [illegible] [illegible] ejection malfunctions were caused, directly or indirectly by the following:

1. Incorrect number of serrations in the inside section of the case web bolt head.
2. Ejectors - [illegible] length.
3. The overall length of the cartridge is minimum, or comparatively shorter number, which could allow the primers to set back and retrude beyond the base of the shell head.

The following [illegible] were [illegible] under:

[illegible] size	Ejector [illegible]
[illegible] .1160	.1159"
[illegible] .1160	.1115
[illegible] .1157	

Lot No.	Manufacturer	Ejector Lot	Ejector length
25247	[illegible]	[illegible]	.1115"
25347	[illegible]	6-3/4 lbs.	.113
25412	[illegible]	6-3/4 lbs.	.1145
24728	[illegible]	6-3/4 lbs.	.114
25413	[illegible]	6-3/4 "	.115
25297	[illegible]	6-3/4 "	.111
25301	[illegible]	6-1/4 "	.111
25308	[illegible]	6-3/4 "	.1085

Recommendations:

It is recommended that before [illegible] further with the [illegible] investigation of the [illegible] be [illegible] for [illegible] material prior [illegible]

[illegible]
[illegible]
[illegible]

Model 722 Pilot Run Rifle

Date 2/17/48 #24728

E.T. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks
	0														Headspace, Bolt, Firing Pin
															Lot off-Test - OK
															6 + 6 prior 12 8
															13 7
															12 6½
															12 7
															12½ 7
	0 – 30					1									8 th Ind Lt Load
	31 – 60					1									47 th " "
	61 – 90					1									85 th " "
						1									86 th " "
	91 – 120					1									90 th " "
						1									95 th " "
						1									110 th " "

Model 722 Pilot Rifle
Date 2/17/48 List
25347

T.	Rounds Fired	Malfunctions														Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		
	0															Lubrication - Max 0K
																" " " 0K
																" " " 0K
																Bolt Opening 1 6
																" 1 6
																" 1 6
																" 1 6
																" 1 6
	0 - 30					1										15th shot Lubrication
						1										" " "
	31 - 60					1										31st " 1 "
						1										32nd " " "
						1										47th "
						1										48th " " "
	61 - 90					1										62nd " " "
						1										85th " " "
	91 - 120					1										93rd " " "
						1										117th " " "

Model 722 Pilot Function Test

Date 2117148 # 5361

R.T. No.	Rounds Fired	Malfunctions														Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		
	0															Headspace, Min OK
																Max OK
																Pull off test OK
																Bolt Opening 13 7
																" 12 6
																13 6
																13 7
																12 6
	0 - 30	OK														
	31 - 60	OK														
	61 - 90	OK														
	91 - 120					1										94th rd slow
						1										95th " "
						1										107th " "

Model 122 Test and Just
Date 2117148 # 25297

S.T. No.	Rounds Fired	Malfunctions														Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		
	5															Headspace Max. OK
																Min. OK
																Barrel Test OK
																Ext. Opening "
																5 " "
																" "
																" "
	0- 30					1										Hit
						1										5th "
	31- 60					1										25th " "
	61- 90					1										65th " "
	91- 120					1										94th " "

Model 722 Pilot Line test

Date 2117148 #25418

T. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks
	)														Mendoza ace Max
															Min
															In all test OK
															Bolt Thickness 2 6
															" " 5
															" " 5 1/2
															" " 5 1/2
															" " 5
	0— 30	OK													
	31— 60	OK													
	61— 90	OK													
	91— 120														109th std slow!
															110th " "

Model 722 Pilot Line test

Date 2/17/48 # 23998

R.T. No.	Rounds Fired	Malfunctions													Remarks
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	
	0														Headspace Max. OK
															Min. OK
															for rifle test OK
															Bolt Opening 13 9
															11 9
															13 9
															11 9
															13 9
	0 — 30					1									9th rd (slow)
						1									20th rd (slow)
								1							override 23rd shell slow
	31 — 60							1							32nd shell jumped rails slow
								1							override 35th shell slow
								1							51st shell jumped rails slow
							1								53rd shell
								1							override 55th shell slow
	61 — 90							1							override 80th shell slow
	91 — 120					1									94th rd (slow)
						1									110th rd slow
						1									115th rd slow

Model 722 Pilot Line Test

Date 2/17/48 # 25412

R.T. No.	Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments	Remarks
	0														Headspace Max. OK
															Min. OK
															Drop off Test OK
															Bolt Jarring 11 10
															14 after firing 13
															12 after firing 9
															13 13 10
	0- 30							1							overcycle shell 5th round
	31- 60	OK													
	61- 90	OK													
	91- 120						1								110th rd (slow)

M/722 Pilot Test 2/25/48

Gun	Ej	Feed
25412	1	1
23998	6	6
25397	7	–
25418	2	–
25361	3	–
25297	5	–
25347	10	–
24728	7	–

120 rds each.

120

Acc.

Acc

Acc

DATE	R.T.#	TEST	ROUNDS FIRED	MALFUNCTION RATE							MALFUNCT				
				OVERALL		ADVERSE			NORMAL						
				TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	FIRING	UNLOCKING	PRIMARY EXTRACTION	SECONDARY EXTRACTION	EJECTION
									60	0	0%					
			40-1060	55	5.2%				1060	55	5.2%	1				54
April 1948	13															

TOOLS				B	R	GF	A	REMARKS
COCKING	FEEDING	LOADING	LOCKING	BREAKAGES	REPLACEMENTS	GUN FAILURES	ADJUSTMENTS	
								Muzzle .308" ±
								1" .309"
								2" .309"
								3" .309"
								4" .3088"
								4. Ammunition of questionable accuracy.
								2 types of ammunition have been used - one of
								which was standardized at 1.4"-100 yds. The
								other type being the same lot as used in
								Plant testing. Standardization of the latter unknown
								correction is being made to obtain suitable
								ammunition before proceeding further with the test.
					2	1		

DATE	R.T.#	TEST	ROUNDS FIRED	MALFUNCTION RATE								MALFUNC				
				OVERALL		ADVERSE			NORMAL							
				TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	FIRING	UNLOCKING	PRIMARY EXTRACTION	SECONDARY EXTRACTION	
1/14/48	11	Live Fire 441-1000	441/1000						560	42	7.5%					(4)
									1000			4				4
									560	42	7.5%					4
			1000	55	5.5%				1000	55	5.5%	1				4
	12	Lot #26	1010													

#25397

TIONS				B	R	GF	A	REMARKS
COCKING	FEEDING	LOADING	LOCKING	BREAKAGES	REPLACEMENTS	GUN FAILURES	ADJUSTMENTS	
)								30 - Slow functioning 7 Med. Functioning 3 - Fast Functio
								In 30 fifty Cases primers were protruding from the caps of
								the shell & Catching on the edge of the ejector. It is
								believed that the fail to eject malfunctions are caused by
			oi	ndustry	by the	following:		
								1. Incorrect Chamfer dimension on inside rim of
								recessed Bolt Head.
								2. Ejectors - Min Length
								3 Shell length of Cartridges are under Min as compared
								with a Master Chamber.
					(1)			Bolt with Correct Chamfer
					1			
					2	1		
								Accuracy firing showed the following
								Average, Extreme Spread 4.6" Mor 5.7" Han 4.1"
								Conditions of Test
	—							Ammunition Lot RIFLE 103 180 Gr SP Range 100 yds
								2x Power Scope, Bench Rest, Fore End Supported By Bench Rest
								Shooter M - Walker & W Leek 3-10 shot groups
								Weather Clear & no wind. This accuracy is not consider
								good & (yawing) of several bullets was noted.
								Poor Accuracy may be attributed to the following
								Conditions:
								1. Shell length under Min as compared with Chamber
								2. Poor bedding of the Barrel & action.
								3. Dimensions of Bore at single section are Large
								especially the section under the sight ramp.

M722 Pistol
Gun #2

DATE	R.T.#	ROUNDS FIRED	MALFUNCTION RATE							MALFUNCTION						
			OVERALL		ADVERSE			NORMAL								
			TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	FIRING	CLEARING	PRIMARY EXTRACTION	SECONDARY EXTRACTION	EJECTION	FEEDING
	5	0-120													(7)	
								120	7	5.8%					7	
			7	5.8%				120	7	5.8%					7	
	6	121-180														
								60	0	0%						
			7	3.9%				180	7	3.9%					7	
	4	181-381									1					
											6				(4)	
								200	5	2.5%	1				4	
			12	3.7%				381	12	3.2%	1				11	
	~~10~~	~~381-440~~														
	10	381-440						~~60~~	~~1.67%~~						(1)	
								60 440	1	1.67%	1				1	
			13	3%				440	13	~~3%~~ 2.9%	1				12	
	11	441-1000													42	
															(1)	

Line Test (.300 Savage)

5397 (Endurance Gun)

LOADING	LOCKING				BREAKAGES	REPLACEMENTS	GUN FAILURES	ADJUSTMENTS	REMARKS
									Accuracy firing shows the following:
									E.S. 3.4" Ammo. Lot
									2x Power Scope, Bench Rest
									Shooters M. Walker, W. Engesth
									Fired indoors
						00			1-malfunction charged Firing Pin Assembly (old assembly was
						1			[illegible] because of burrs on base of firing pin.) Other
						1			[illegible]
						1			[illegible]
									[illegible]
									60° down
						1	1		
									Typ Counter Charge see dimension below Hard Case as
									Primer as protrudes from fired case shell bag below min.
									Protruded Primer catches on edge of ejector at the same time
									the side of the brass the shell bends against the recess bolt head.
									Chamber. The Chamber dimensions are believed to disagree
									with the Remington [illegible] as being Checked
									on the [illegible] the shoulder bearing area of the
									300 S. shell is very small & it is believed by the writer that

DATE	R.T.#	ROUNDS FIRED	MALFUNCTION RATE							MALFUNCT						
			OVERALL		ADVERSE			NORMAL								
			TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	FAILED TO	UNLOCKING	PRIMARY EXTRACTION	SECONDARY EXTRACTION	EJECTION	COCKING
3/4/48																

LOCKING	BREAKAGES	REPLACEMENTS	GUN FAILURES	ADJUSTMENTS	REMARKS
					EACH SIX 5 SHOT GROUPS WERE FIRED WITH EACH GUN (2 SHOOTERS FIRED THREE GROUPS EACH) AT 100 YDS. FROM A BENCH REST USING A 10 POWER SCOPE. AMMO: (7030) 180 GR. SOFT PT. CORE-LOKT EXP. LOT M2IC STAND. (100YD) 1.44 AVG EXTREME SPREAD. RESULTS AS FOLLOWS:

GUN #	AVG EXTREME SPREAD
25297	2.85"
24728	3.78"
25418	5.3"
23998	5.2"
25347	2.94"
25361	3.8"
25412	3.1"
25397	3.4"

GUN # 25397 WILL BE USED AS THE ENDURANCE GUN.

M1722 P1-

DATE	R.T.#	ROUNDS FIRED	MALFUNCTION RATE							MALFUNCTION							
			OVERALL		ADVERSE			NORMAL									
			TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	ROUNDS	TOTAL	PERCENT	FIRING	UNLOCKING	PRIMARY EXTRACTION	SECONDARY EXTRACTION	EJECTION	COCKING	FEEDING
	5	0-120	2	1.7	—	—	—	120	2	1.7							1
															1		
	5	0-120	12	10	—	—	—	120	12	10							6
															6		
	5	0-120	7	5.8	—	—	—	120	7	5.8					7		
	5	0-120	2	1.7	—	—	—	120	2	1.7					2		
	5	0-120	3	2.5	—	—	—	120	3	2.5					3		
	5	0-120	5	4.2	—	—	—	120	5	4.2					5		
	5	0-120	10	8.3	—	—	—	120	10	8.3					10		
	5	0-120	7	5.8	—	—	—	120	7	5.8					7		

LINE TEST (.300 SAVAGE)

S	LOADING	LOCKING				B BREAKAGES	R REPLACEMENTS	GF GUN FAILURES	A ADJUSTMENTS	REMARKS
										8 M/722 RIFLES WERE CHOSEN FROM A LOT OF FIFTY AND FIRED 120 RNDS. EACH WITH RESULTS AS FOLLOWS:
										GUN # 25412
										BOLT OVER RODE 5TH RND.
										FAILED TO EJECT (SLOW)
										GUN # 23998
										4- BOLT OVER RODE SHELL (SLOW)
										2- SHELL JAMMED RAILS (SLOW)
										FAILED TO EJECT (SLOW)
										GUN # 25397
										FAILED TO EJECT (SLOW)
										GUN # 25418
										FAILED TO EJECT (SLOW)
										GUN # [illegible]
										FAILED TO EJECT (SLOW)
										GUN # [illegible]
										FAILED TO EJECT (SLOW)
										GUN # [illegible]
										FAILED TO EJECT (SLOW)
										GUN # 24728
										FAILED TO EJECT (SLOW)
										W. J. E. - 2/24/45

Issued...2/1/...

Production Line Test

~~STANDARD ENDURANCE TEST~~

CENTER FIRE RIFLES

Conditions of Firing: One shot every 5 seconds. Time includes cooling and loading. Cool with compressed air every 40 rounds. Functioning - slow, medium and fast. Alternately load magazine. See Ammunition Schedule attached.

Conditions of Test and: Make the following Measurements, Cleaning and Inspection at 180 rnds ~~Initial~~ every 1,000 rounds and/or 10,000 dry cycles.

Clean barrel with water cooling solution.

...dimensions.

...Test #8.

...120, 2000, 4000,

...bolt and manual ...cycles. Measure ...at 0 and 5000 rds.

	Rounds
1.	
2.	
3. Barrel	
4.	
5.	
6. Accuracy Test (8 Guns 119 rnds each) (3 " 60 rnds. each)	2-120 121-180 181-280
9.	
7.	

C-1

...ps. Determine ...Heat Treat Specifi- ...Committee

		Rounds
9.	Product Inspection Test.	
~~12~~	~~Accuracy Test #4 - 60 rounds.~~	~~[illegible]~~
10.	Angular Position Test - 60 rounds (20 rds. in each position).	381-440
~~11.~~	~~Interchangeability Test [illegible] (No rounds in this test).~~	
~~X 13.~~	~~Determine position of [illegible] - 100 rounds.~~	~~[illegible]~~
11.	Live Fire Test #12 - 560 rounds.	441-1000
12.	Accuracy Test #4 - 60 rounds.	1001-1060
13.	Feeding rounds into [illegible] Test - 20 rds.	1061-1080
14.	Fire 1 proof round.	1081-1082
15.	Live Fire Test #12 - 839 rounds.	1082-1920
16.	Breech Gas Escape Test - 80 rounds.	1921-2000
17.	Accuracy Test #4 - 60 rounds.	2001-2060
18.	Fire 1 proof round.	2061-2062
*19.	No Lubrication Test - 200 rounds.	2063-2262
20.	Lubricate gun using Type III Lubrication.	
*21.	Cold Test (-20°F.) - 100 rounds.	2263-2362
*22.	Ice Test (-20°F.) - 5 rounds.	2363-2367
23.	Live Fire Test #12 - 632 rounds.	2368-3000
24.	Accuracy Test #4 - 60 rounds.	3001-3060
25.	Fire 1 proof round.	3061-3062
*26.	Dust Test - 20 rounds.	3063-3082
27.	[illegible]	
28.	[illegible] - 898	3083-3980
*29	[illegible]	3981-4000
30.	[illegible] - 60	4001-4060
31.	[illegible]	4061-4062
32.	[illegible]	
*33.	[illegible]	4063-4082
*34	[illegible] 30 rounds per	4083-4142

60/100

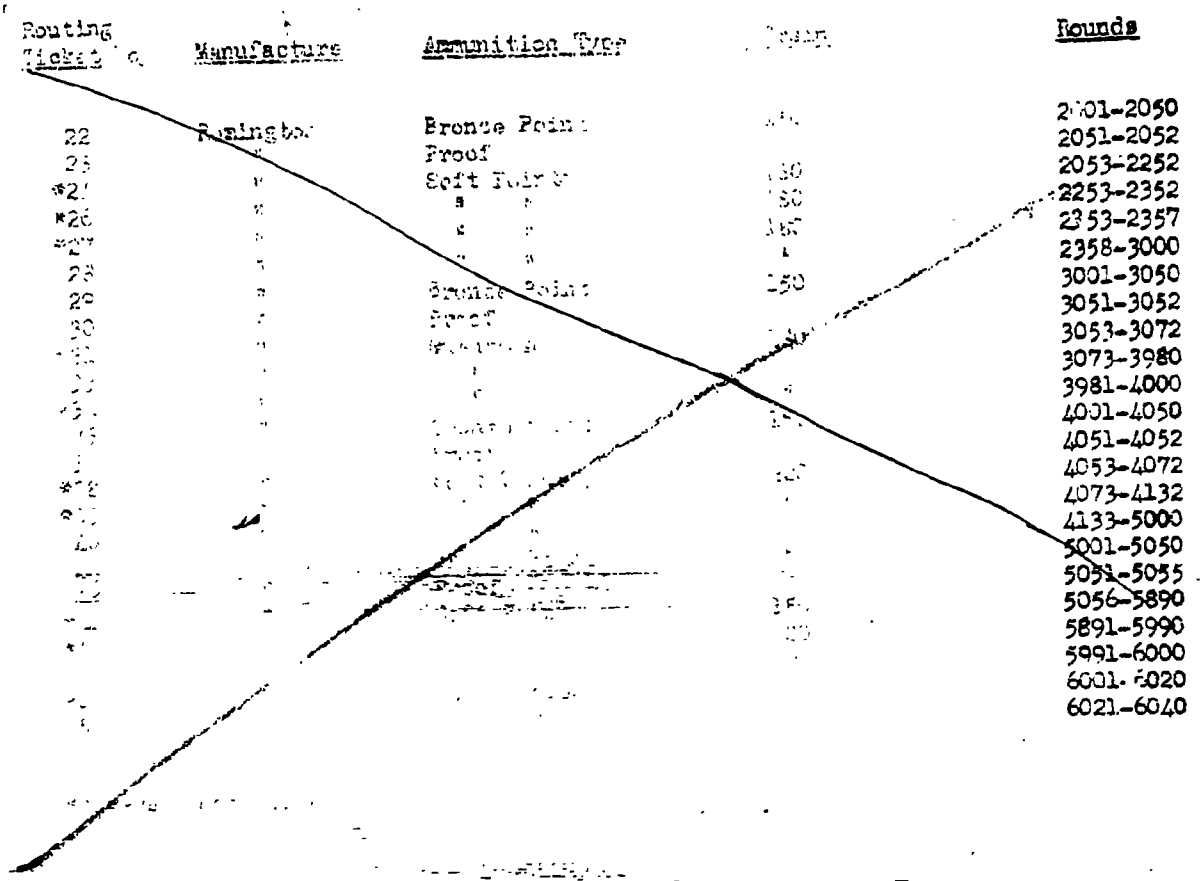
		Rounds
35. ~~39.~~	Live Fire Test #4 - ~~250~~ rounds.	4145-5000
36. ~~41.~~	Accuracy Test - ~~60~~ rounds.	5001-5060
37. ~~42.~~	Fire 5 Proof Rounds.	5061-5065
38. ~~43.~~	Head Space Test #3.	
~~39~~	"Cook Off Test" - for autoloading arms only. "Cook Off" can be obtained under [illegible] firing. Use Proof Chamber. For other arms, fire same number [illegible]	5066-~~5939~~ 5940
40. accuracy	60 rnds	5940-6000
41.	Determine if firing [illegible]	
~~*46.~~	~~*Sub Zero Test (-60°F.) - [illegible]~~	~~[illegible]~~
~~*47.~~	~~Chamber Fit Test #45 - [illegible]~~	~~[illegible]~~
48.	Perform 10,000 Dry Cycle Operations	
~~*49.~~	~~Gun Strength Test. Subject gun to [illegible] until strength is determined. [illegible]~~	~~[illegible]~~
~~*50.~~	~~Safety Lug Shear Test - [illegible]~~	~~[illegible]~~

*Adverse Conditions Test.

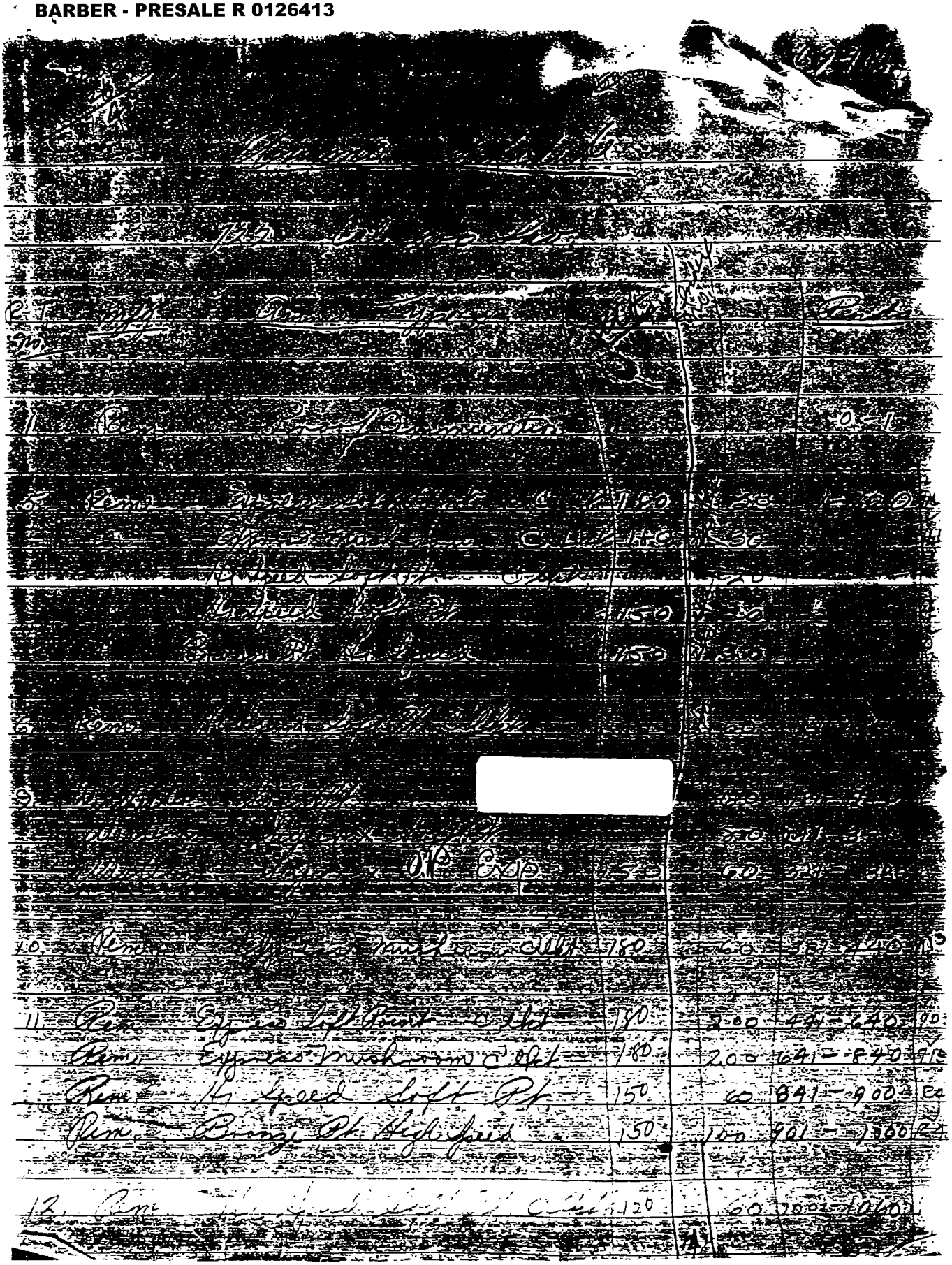
AMMUNITION SCHEDULE

M/721 - Cal. 30-06 [illegible]

Routing Ticket No.	Manufacture	Ammunition Type		Rounds
3	Remington	Proof Ammunition		0-1
8	Remington	Hi Speed, Bronze Point	180 (.3 ounce)	2-120
	"	Hi Speed, Soft Point	[illegible]	
	"	Soft Point [illegible]	[illegible]	
9	Eastern	Open Point [illegible]	[illegible]	[illegible]
	"	Soft Point	[illegible]	
	"	Open Point [illegible]	[illegible]	
	"	Silvertip	[illegible]	
	Winchester	Super Speed	[illegible]	
12	Remington	Bronze Point	[illegible]	[illegible]
*13	"	Soft Point	[illegible]	[illegible]
15	"	Mushroom	[illegible]	[illegible]
	"	[illegible]		[illegible]
	"			[illegible]
16	"	[illegible]		[illegible]
17	Remington	[illegible]		[illegible]
18	"			[illegible]
19	"	[illegible]		[illegible]
20	"	Hollow Point	[illegible]	[illegible]
21		[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]
	"	Bronze [illegible]	[illegible]	[illegible]



Routing Ticket #	Manufacture	Ammunition Type	Grain	Rounds
22	Remington	Bronze Point		2001-2050
23	"	Proof		2051-2052
*24	"	Soft Point	180	2053-2252
*25	"	"	180	2253-2352
*26	"	"	165	2353-2357
*27	"	"	"	2358-3000
28	"	Bronze Point	150	3001-3050
29	"	Proof		3051-3052
30	"			3053-3072
				3073-3980
				3981-4000
				4001-4050
				4051-4052
				4053-4072
*8				4073-4132
*11				4133-5000
				5001-5050
				5051-5055
		Proof		5056-5890
				5891-5990
				5991-6000
				6001-6020
				6021-6040

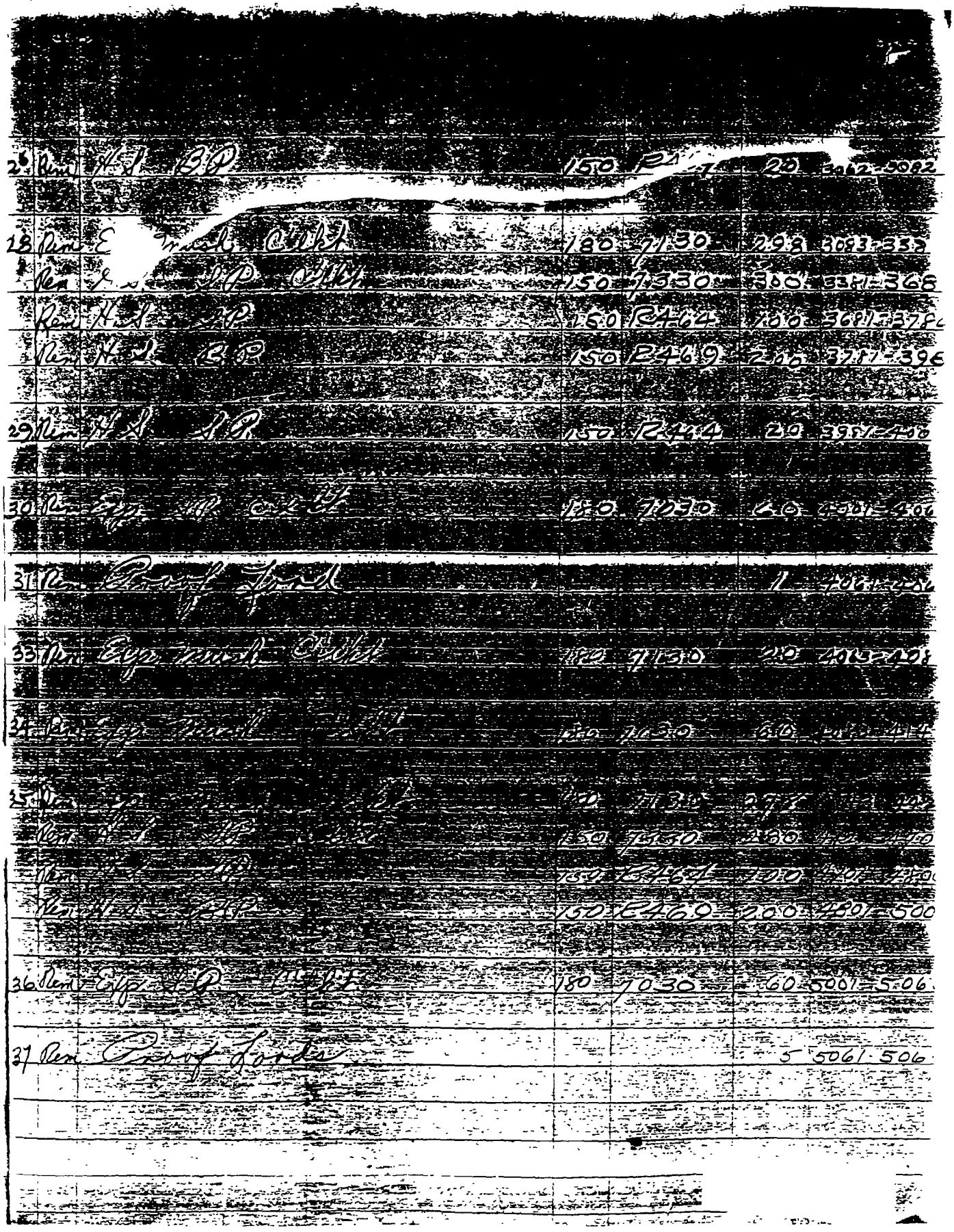


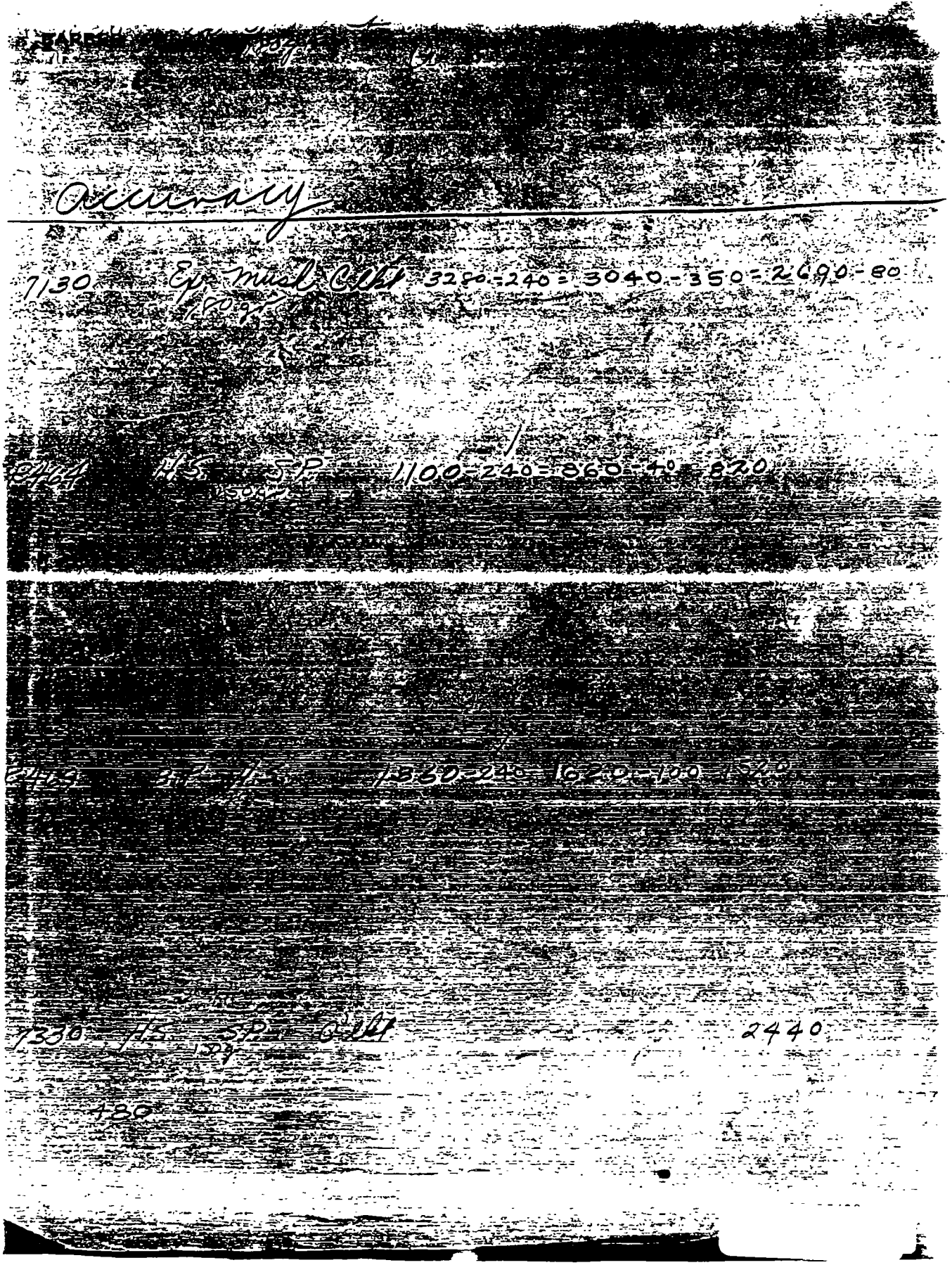
13	Rem	Ammunition				20	1041-1060
14.	Rem	Prep. Work				1	1081-1082
15	Rem	H.S. L.P. Gallery		150	7330	350	1121-1470
	"	Express Match Gallery		180	7130	350	1471-1820
	"	High Speed Light Point		150	R464	339	1082-1120
	"	High Speed Bronze Point		150	R469	100	1821-1920
16	Rem	Express Match Gallery		180	7130	80	1921-2000
17.	Rem	Exp. L.P. Gallery		180	7030	60	2001-2060
18	Rem	Prep. Work				1	2061-2062
19.	Rem	Exp. Match Gallery		180	7130	200	2063-2260
21	Rem	H.S. L.P. Gallery		150	7330	100	2261-2360
22	Rem	H.S. L.P. Gallery		150	7330	5	2361-2365
23	Rem	H.S. L.P. Gallery		150	7330	192	2365-2556
	"	Exp. Match Gallery		180	7130	300	2557-2860
	"	H.S. BP		150	R469	100	2861-2960
	"	H.S. SP		150	R464	40	9261-3000
24	Rem	Exp. L.P. Gallery		180	7130	60	3001-3060
25	Rem	Prep. Work				1	3060-3061

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126414

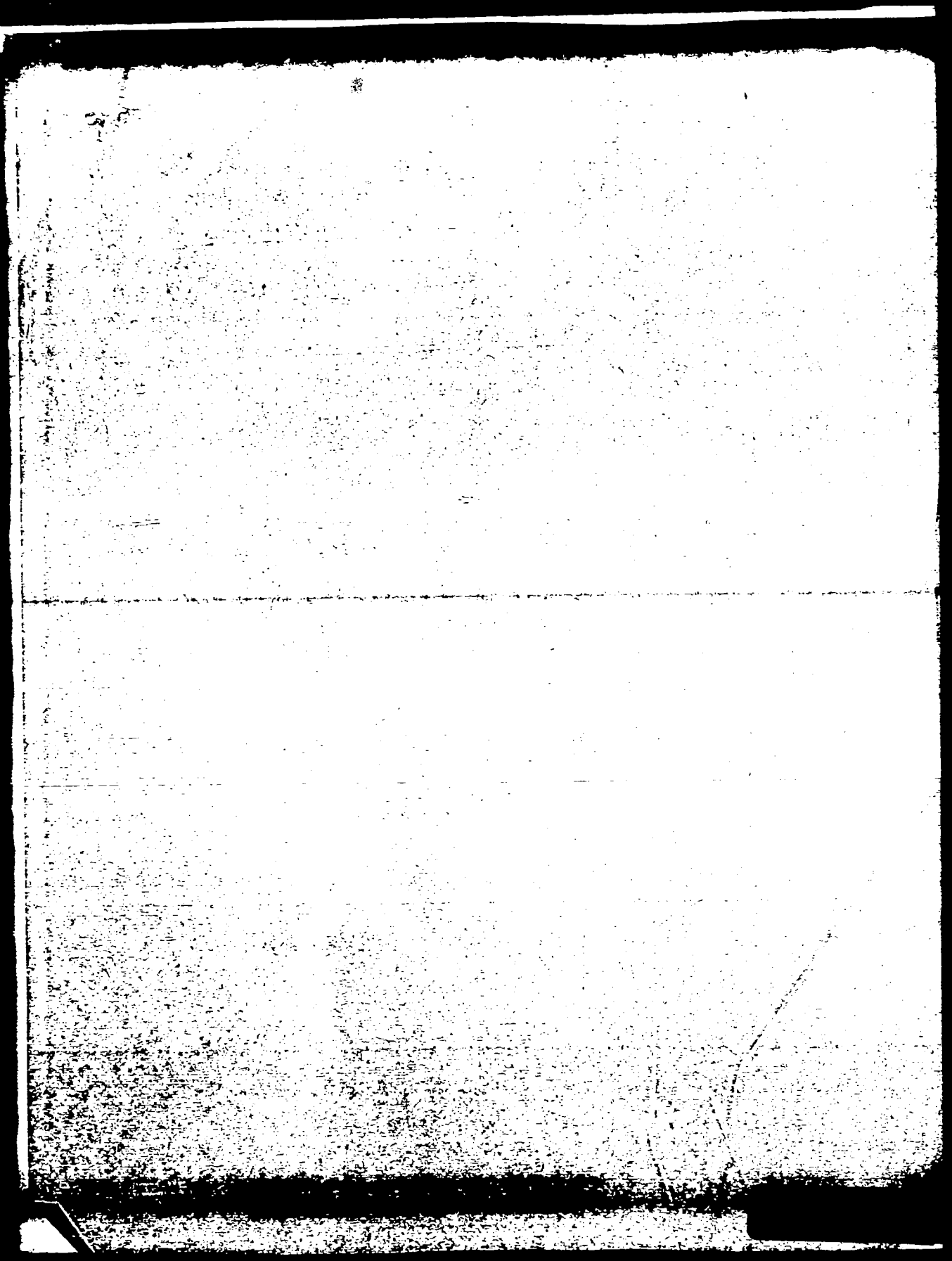
R2527402




Accuracy
7130 Exp. Mush Cbt 3280-240=3040-350=2690-80
8464 HS SP 1100-240=860-40=820
7330 HS SP Cbt 2440

39	Rem	Exp-mach Clkt	180	7130	295	5066-5360
	"	H.L. SP Clkt	150	7330	300	5361-5660
	"	H.L. BP	130	R469	200	5861-5860
	"	H.L. SP	150	R464	80	5861-5940
40	Rem	Exp SP Clkt	180	7030	60	5941-6000

5940
5066
874



1st Sheet

Model 722 Pilot Line Rifle

Date 2/17/48 # 25397

R.T. No.	Rounds Fired	Malfunctions													Remarks	
		Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		
	0														Headspace	OK Min OK
																Max OK
															Jar off Test	OK
															Bolt Opening	13 7
																11 6
																11 7
																12 6
																11 6
	0 - 30					1									20th rd	slow
	31 - 60					1									32nd rd	" "
															33rd rd	" "
															58th rd	" "
	61 - 90														62nd rd	" "
	91 - 120														94th rd	" "
															109th rd	" "
	121 - 180														Accuracy Test	

#½ Sheet

Model 722 Pilot Line test

Date 3/17/48 #25397

Rounds Fired	Malfunctions														Remarks
	Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Loading	Locking	Breakages	Replacements	Gun Failures	Adjustments		
180															Trigger Pull 6# 8oz
															6 13
															6 4
															6 7
															6 5
															Firing Pin Indent - .0165"
															.017
															.0165
															.017
															.0155
															Headspace Max OK
															Min OK
															Bolt Opening — 14 - 13
															10 - 13
															13 - 11
															11 - 11
															10 - 12

#3 sheet

Model 722

Date 3/17/48

Pilot Final Testing

25397

Round No.	Round Fired	Malfunctions: Failure to Feed	Failure to Lock	Failure to Unlock	Failure to Extract	Failure to Eject	Failure to Cock	Failure to Feed	Failure to Load	Failure to Fire	Slam Fire	Accidental Discharge	Gun Locked	Other Malfunctions	Remarks
	180														
181–	220														OK
221–	260					1									fail to eject (S)
	①														fail to fire (light blow)
261–	300					2									" " " " "
						3									fail to eject (S)
301–	340					4									fail to fire (~~hot~~ ~~ammo~~ not charged)
341–	380									①		1			left seared out New firing pin assembly Cold assembly was binding because of burrs on F.P.
	②														fail to fire (at 340 lds Ancular test
381–	395														OK Left side up
396–	410														OK Right " "
411–	425														Up
426–	440					1									OK Down fail to eject (S)
441–	470					4									fail to eject (SS IMS)
Zollep 471–	490					III									" " " Very Slow
						II				(.030)					Sticks inside of bolt head under extractor
491–	500														
501–	520					II									Slow Very lazy ejector
521–	540					II									"
	560					III									Shell sticks inside bolt head under ext. also binds

#4 sheet

Model 722

Pilot time testing

Date

25397

ZELLER

No. Rounds Fired	Malfunctions: Firing	Unlocking	Primary Extraction	Secondary Extraction	Ejection	Cocking	Feeding	Locking	Locking Engagements	Incomplete Engagements	Gas Port Erosion	Accelerator	Remarks
Refer to #3 sheet													
581-600					2								fails to eject slow finds on ejector
601-640					2								" " "
641-680					1								" " " finding
681-700					2								" " "
701-740					1								" " "
													fault of Ammo - primes finds on ejector
741-780					2								slow
					1								fast
					1								binding on primer
781-800					2								slow
801-820					1								"
821-840					3								"
841-880					2								"
881-920					3								"
921-960					2								"
													Bolt handle beginning to raise hard
961-1000					2								fail to eject Stem Chamber
					(1)						(1)		Compressor Ejector fails

Model _____

Date _____

No.	Round Fired	Malfunctions												Remarks
		Failure to Fire	Failure to Extract	Failure to Eject	Failure to Feed	Failure to Lock	Failure to Cock	Misfire	Light Primer Strike	Hang Fire	Slam Fire	Failure to Reset Trigger	Other Malfunctions	

Model _____

Date _____

F.T. No.	Inspection Points	Malfunctions											Remarks

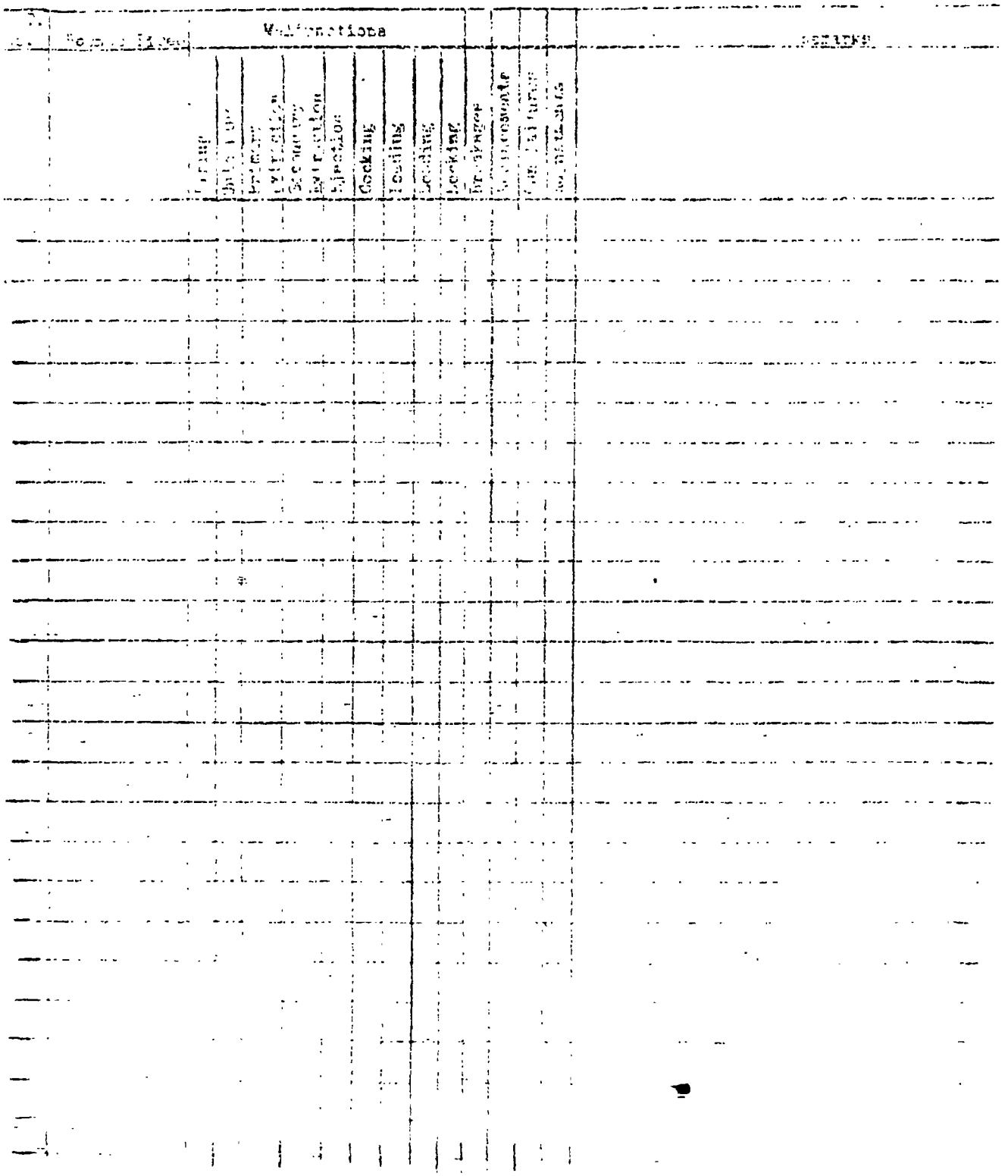
Model _____

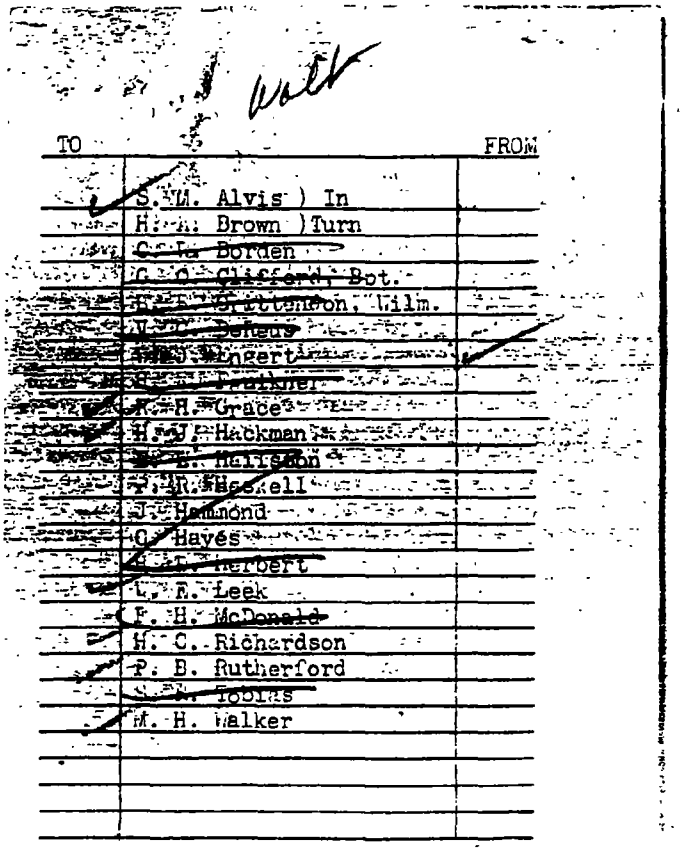
Date _____

Malfunctions													Remarks

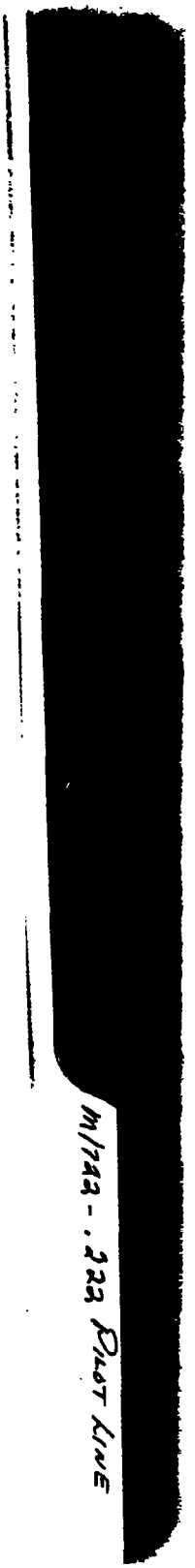
Model _____

Date _____





TO	FROM
S. M. Alvis) In	
H. A. Brown) Turn	
~~C. L. Borden~~	
~~C. O. Clifford, Bot.~~	
~~E. F. Grattenson, Wilm.~~	
~~W. C. Deseur~~	
~~A. O. Engert~~	
~~R. E. Faulkner~~	
~~R. H. Grace~~	
~~H. J. Hackman~~	
~~E. E. Harrison~~	
~~T. R. Haskell~~	
~~J. Hammond~~	
~~C. Hayes~~	
~~R. T. Herbert~~	
L. E. Leek	
~~F. H. McDonald~~	
H. C. Richardson	
P. B. Rutherford	
~~S. A. Tobias~~	
M. H. Walker	


M1911 - .22 Pilot Line

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT DUPONT COMPUTATION SHEET SHEET NO

TITLE OF PROJ PROJ. NO

SUBJECT M722 - 222 cal. accuracy test WORKS

GHH COMPUTER DATE 19

Extreme Vert. Variant

94103 - .020 - .019 - .019 - .019 - .019

94125 - .021 - .022 - .021 - .021 - .023

94064 - .021 - .021 - .022 - .021 - .021

94115 - .020 - .019 - .019 - .019 - .020

94043 - .019 - .019 - .020 - .020 - .019

94085 - .021 - .021 - .021 - .021 - .020

94122 - .019 - .019 - .019 - .019 - .020

94090 - .021 - .022 - .021 - .021 - .021

94038 - .020 - .019 - .019 - .018 - .020

94054 - .018 - .018 - .019 - .019 - .019

RO 3943

REMINGTON ARMS COMPANY, INC.

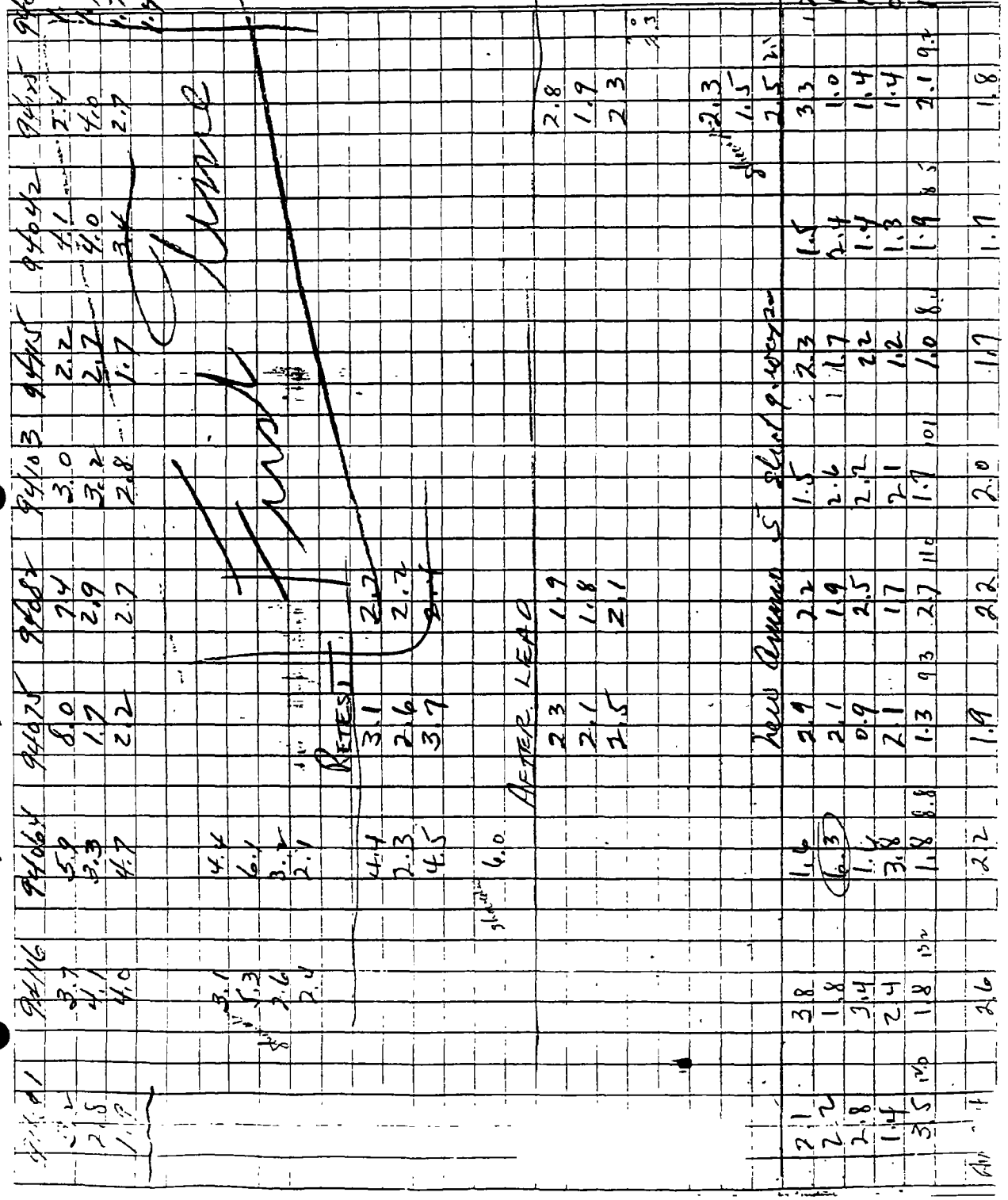
ENGINEERING DEPARTMENT DUPONT COMPUTATION SHEET

SHEET NO.

TITLE OF PROJ PROJ. NO.

SUBJECT WORKS

COMPUTER DATE



RD 5849

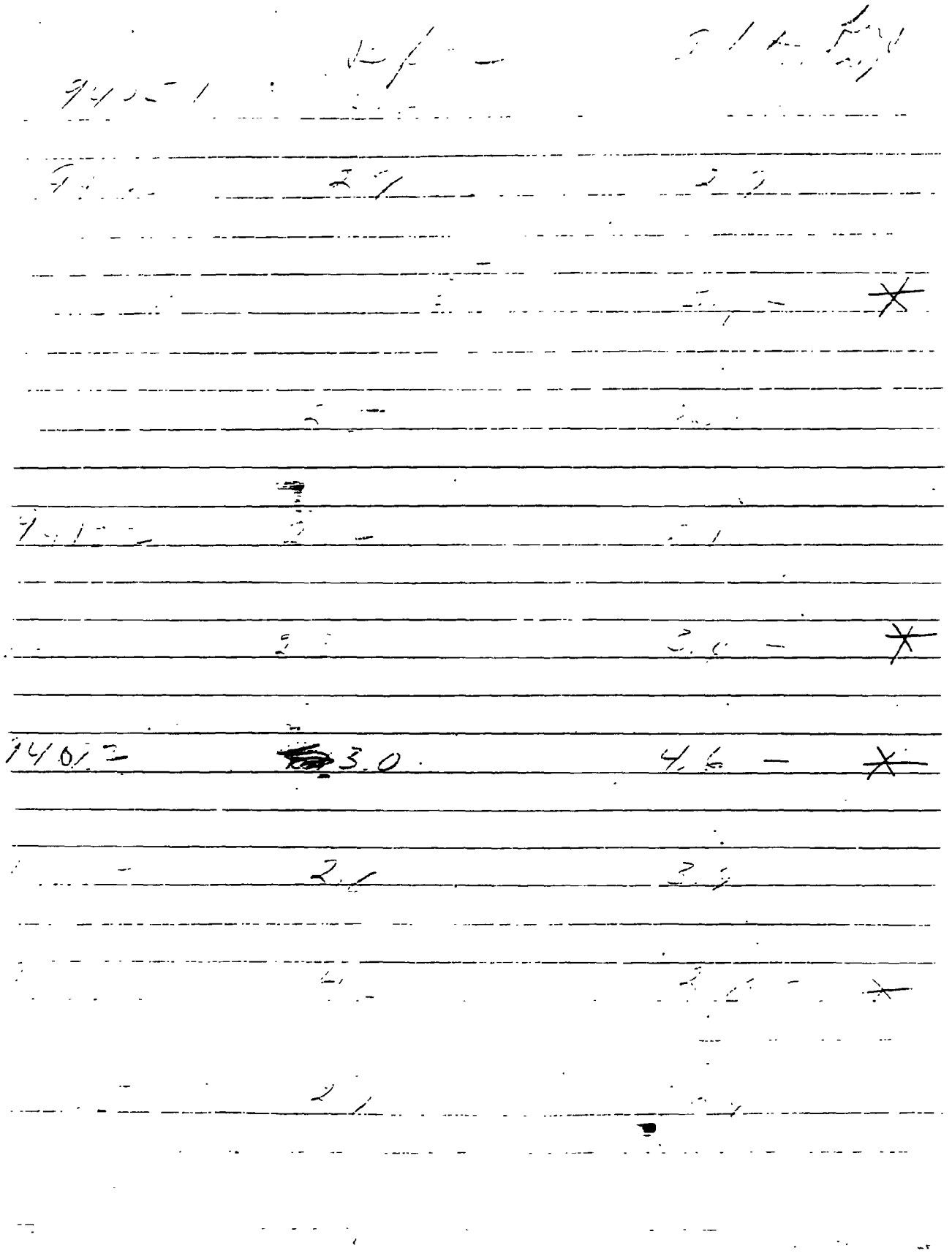
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT CLIP COMPUTATION SHEET SHEET NO

TITLE OF PROJ 222 PROJ NO

SUBJECT COMPUTER DATE

94064	Mingle	2244				2197
	Bench	2248				2190
94043	Mingle	2244	2248			2199
	Bench	2240				2195



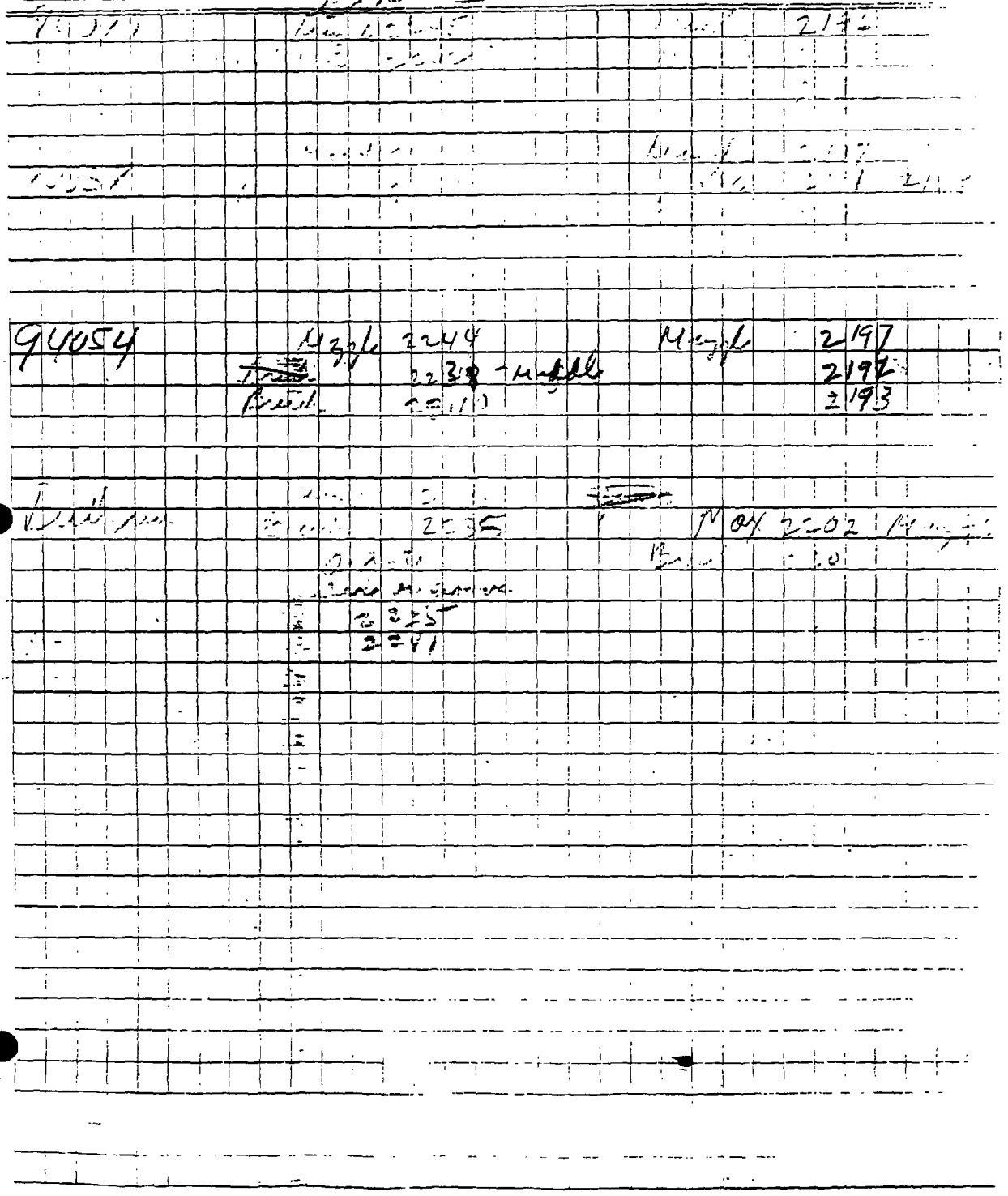
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT (DU PONT) COMPUTATION SHEET SHEET NO ____

TITLE OF PROJ ____ PROJ NO. ____

SUBJECT ____ WORKS ____

COMPUTER ____ DATE ____ 19__



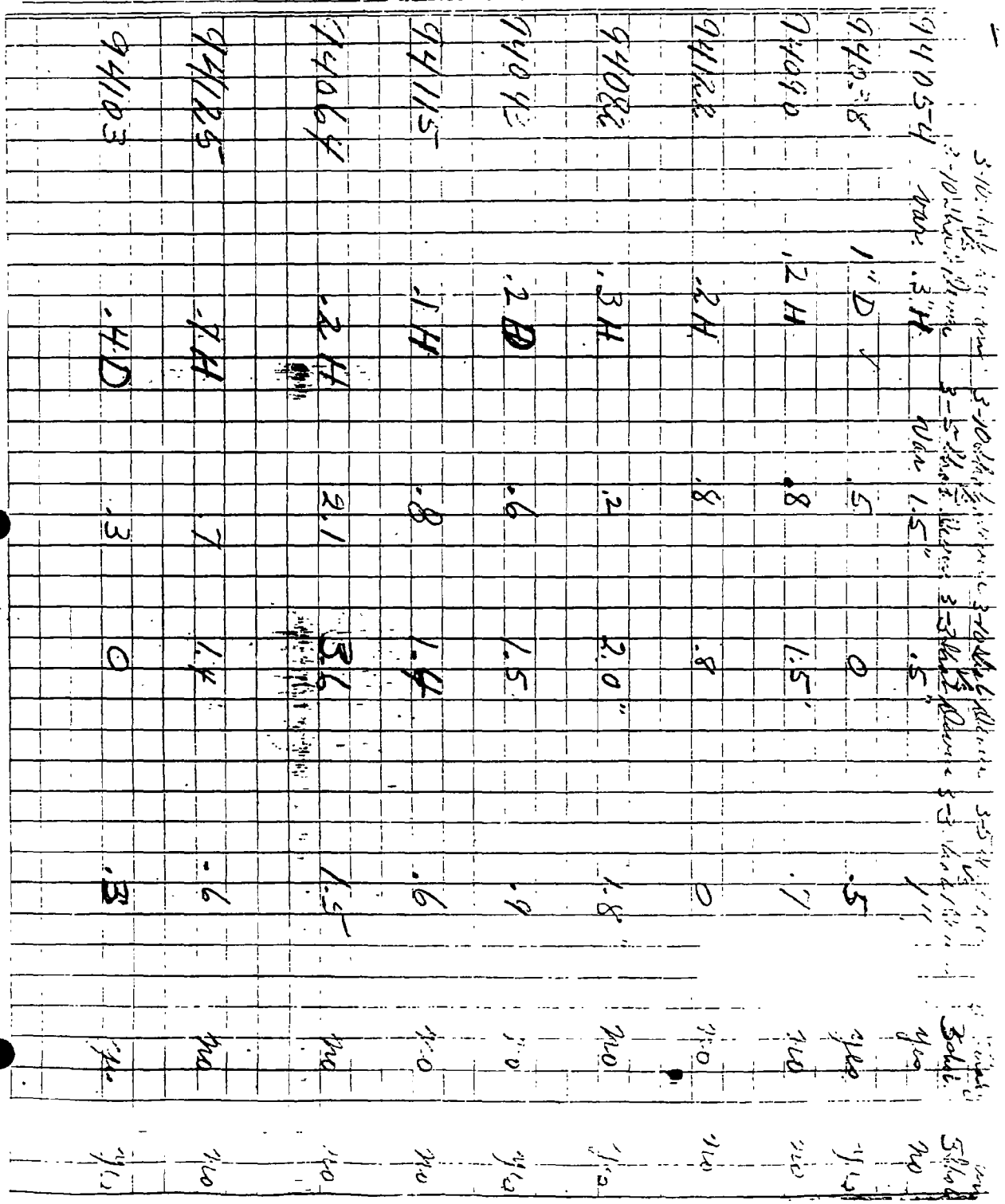
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT DUPONT COMPUTATION SHEET

TITLE OF PROJ _____ PROJ. NO _____

SUBJECT _____ WORKS _____

COMPUTER _____ DATE _____ 19 _____



9CC90

0-10		
10-20		
20-30		
30-40		
40-50		
50-60		
60-70		
70-80		
80-90		
90-100		
-120	1	
121-140		
141-160		
161-180	1	2nd R BOLT OVERRIDE SHELL
181-200		
201-220	1	2nd R BOLT OVERRIDE SHELL
221-240		
241-260	1	1ST R BOLT OVERRIDE SHELL
261-280		
281-300		
301-310		
311-330		
331-350		

722
11/19/49

9d122

Above med Fuel

	0 - 10
	10 - 20
	20 - 30
	30 - 40
	40 - 50
	50 - 60
	60 - 70
	70 - 80
	80 - 90
	90 - 100
	101 - 120
F	121 - 140
	141 - 160
	161 - 180
	181 - 200
	201 - 220
	221 - 240
	241 - 260
	261 - 280
	281 - 300
	301 - 320
	321 - 340
	341 - 360

722
11/10/49

D 94125

6-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
101-120
F 121-140
141-160
161-180
181-200
201-220
221-240
241-260
261-280
281-300
301-320
321-340
341-360

722

11/19/74

#9403

Live and Fast

6-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
101-120
F 121-140
141-160
161-180
181-200
201 220
221-240
241-260
261-280
281-300
301 -
321 -
341 -

727
11/19/09

94038

0 - 10
10 - 20
20 - 30
30 - 40
40 - 50
50 - 60
60 - 70
70 - 80
80 - 90
90 - 100
101 - 120
121 - 140
141 - 160
161 - 180
181 - 200
201 - 220
221 - 240
241 - 260
261 - 280
281 - 300
301 - 320
321 -
341 -

727
11/26/09

94664

0-10		
10-20		
20-30		
30-40		
40-50	✓	X
50-60		
60-70		
70-80		
80-90		
90-100		
101-120		
121-140		
141-160		
161-180		
181-200		
201-220		
221-240		
241-260		
261-280		
281-300		
301-320		
321-340		
341-360		

November 21, 1949

MINUTES OF MEETING ON THE .222 CAL. PILOT RIFLES

Gun Room
Monday, November 22, 1949
10:00 A.M.

Attending:	H. J. Hackman	W. A. Best	W. E. Leek
	S. M. Alvis	E. A. Streed	M. H. Walker
	V. G. DeReus	E. K. Wheat	

Wayne Leek reported that the function of the .222 caliber rifles is satisfactory. He also reported that the accuracy is not as good as it should be.

The remainder of the discussion was concerned with methods of improving accuracy of the .222 caliber rifle. It was decided to:

1. Assemble a second pilot lot of 50 guns, following the assembly closely to determine at which points the Barrel dimensions become unsatisfactory.

2. Shoot these rifles, using a temporary specification of 1½" for fove shots.

3. Those rifles not passing the 1½" specification would be inspected dimensionally in the bore and the usual process of repair applied to bring them within bore variation specifications of .0005".

4. An attempt will be made to select unstraightened Barrel blanks after Heat Treat for the .222 caliber Barrel.

5. Further production of .222 caliber Barrels (other than those in process) will be delayed until corrective measures have been determined to bring the .222 finished Barrel within limits of .0003" variation in the bore.

6. Pilot test for accuracy will be made selecting the guns from the second pilot lot of 50 guns.

M. H. Walker
Arms Technical Division

MHW:eg

722
1/11/49

± 94054

20 - 40		
40 - 60		
60 - 80		
80 - 100		
100 - 120		
120 - 140		
140 - 160		
160 - 180	Bolt override recoil bolt	X
180 - 200		
200 - 220		
220 - 240		
240 - 250		
F 260 - 270		
280 - 290		
300 - 310	BOLT OVERRIDE SECOND SHELL	
320 - 330	" " " " "	X
340 - 350		

722

11/19/69

#94103

SLD. WED. FLT.

	0-20
	20-40
	40-60
	60-80
	80-100
	100-120
	120-140
	140-160
	160-180
	180-200
	200-220
	220-240
	240-250
F	250-270
	270-290
	300-310
	320-330
	340-350

SAFELY BINDS WHEELS

94115

F.	0-10
	10-20
	20-30
	30-40
	40-50
	50-60
	60-70
	70-80
	80-90
	90-100
	101-120
	121-140
	141-160
	161-180
	181-200
	201-220
	221-240
	241-260
	261-280
	281-300
	301-320
	321-340
	341-350

#94082

6-10
10-20
21-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
101-110
111-120
121-130
131-140
141-150
151-160
161-170
171-180
181-190
191-200
201-210
211-220
221-230
231-240
241-250
251-260
261-270
271-280
281-290
291-300
301-310
311-320
321-330
331-340
341-350

CC: J. S. W. Alvis
W. S. Foote

November 7, 1949

TO: H. J. Hackman

FROM: W. E. Leek

SUBJECT: M/722 - 222 CALIBER PILOT LINE TESTING

Functional testing of these guns has not been made because we have been striving to obtain satisfactory accuracy. However, even after additional lapping of the guns they have shown some improvement but we have not been able to obtain satisfactory groups with the ammunition available. This ammunition, from tests in a bull gun, shows that the gun should be capable of shooting groups of 1.5" extreme spread, 5 shots, or less.

We recommend that the ten test guns which we have selected at random from the pilot run be returned to the Plant and that all of the guns in the 222 caliber be relapped by plant personnel and a random sample again selected and [illegible]

W. E. Leek
Arms Technical Division

WEL/ml

CC: S. M. Alvis
D. S. Foote

November 7, 1949

TO: H. J. Hackman

FROM: W. E. Leek

SUBJECT: M/722 - 222 CALIBER PILOT LINE TESTING

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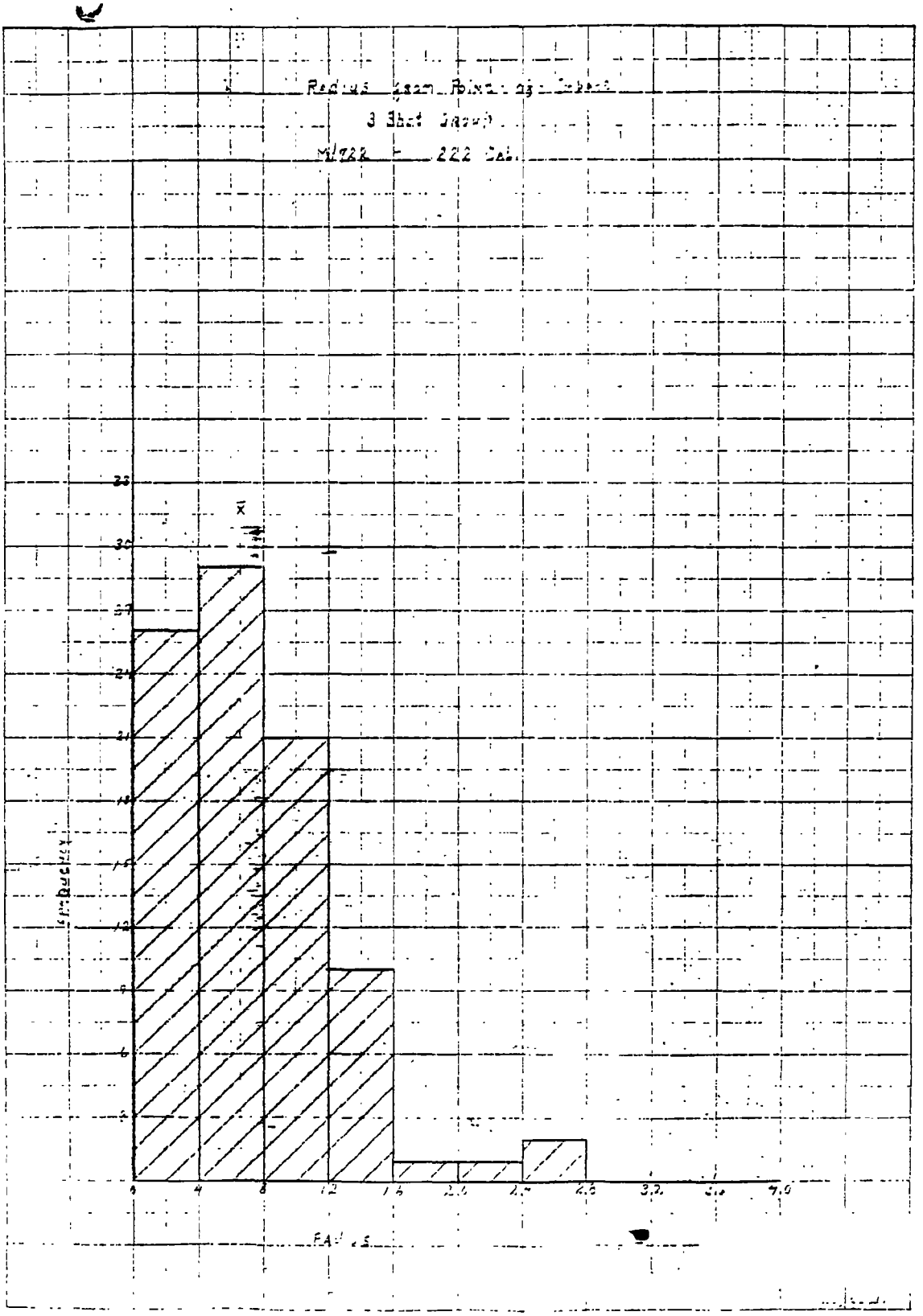
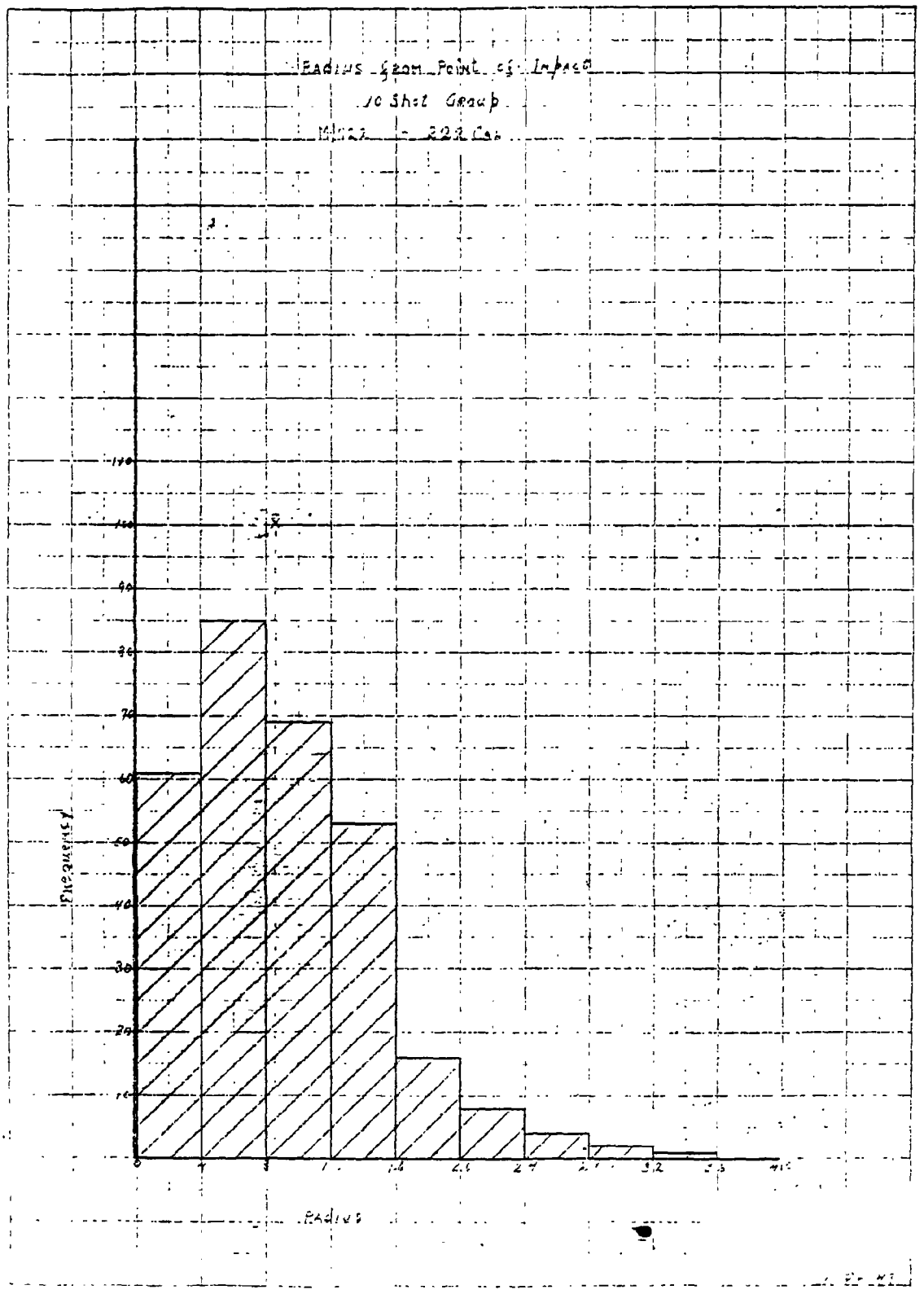
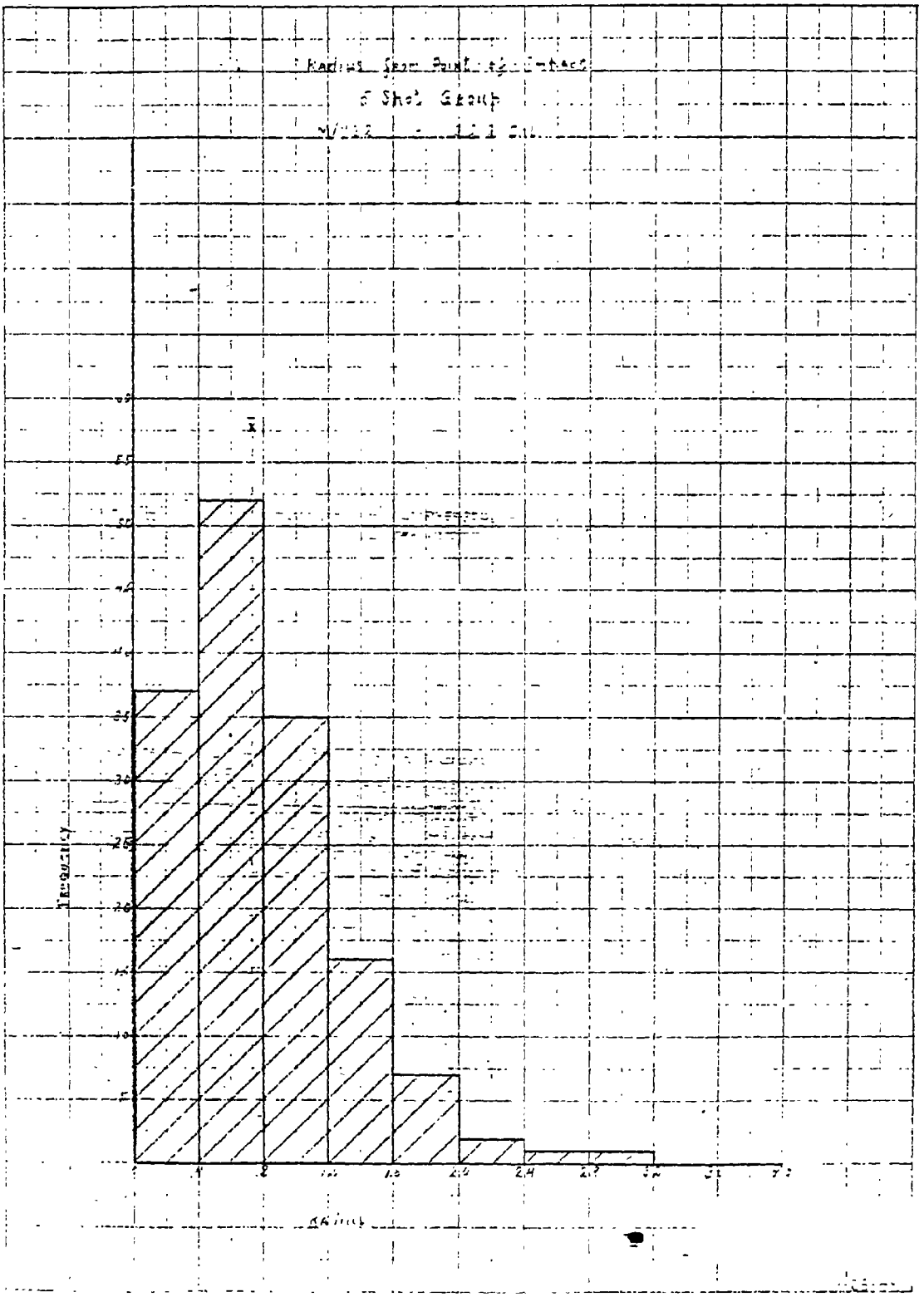
W. E. Leek
Arms Technical Division

WEL/ml


Radius Beam Points of Impact
3 Shot Group
Mid Range - 222 Cal.
X
Frequency
F.A.S.


Radius from Point of Impact
10 Shot Group
Frequency
Radius


5 Shot Group
Frequency

CC: S. M. Alvis
D. S. Foote

November 7, 1949

TO: H. J. Hackman (2)

FROM: W. E. Leek

SUBJECT: ACCURACY & FIELD PERFORMANCE - 222 REMINGTON AMMUNITION

The following is a report pertaining to our findings concerning the inherent accuracy of Lot U28M104, 222 Remington Ammunition and the results of actual field tests on vermin. Specifications of the accuracy test were as follows.

1. Bull gun with 20 power scope.
2. Ammunition lot U28M104.
3. Firing rate - 1 shot every 30 seconds.
4. Bench type gun rest with sand bag support at fore-end and stock.
5. 2 shooters - C. J. Theriault & W. E. Leek.
6. Enclosed 100 yard range.
7. Extreme spread measurements (inside to inside) 6 ten shot groups.

Results of the accuracy test were as follows.

Shooter	Target	E. S.	V. S.	M. S.
W. E. Leek	1	.7	.65	.4
	2	.9	.65	.85
C. J. Theriault	1	1.3	.4	1.3
	2	.9	.7	.9
	3	.6	.5	.6
	4	1.2	.7	1.0
Total		5.6	3.6	5.05
Av.		.9	.6	.84

The objective in the field test conducted by W. H. Walker and the writer was to determine performance of the 43 grain bullet on vermin, at various ranges, brush penetration, ricochets on rocks (wet and dry ground), etc.

H. J. Hackman (2) -2- November 7, 1949

SUBJECT: ACCURACY & FIELD PERFORMANCE - 222 REMINGTON AMMUNITION

Results of this test show the following.

1. Complete ricochets were not possible under any circumstance.
2. Effect on vermin such as crows and chucks was very good giving good clean kills up to 200 yards.
3. Brush penetration tests show that complete disintegration of the bullet can be expected when fired thru green trees 1/2" in diameter.

REMARKS:

It is the writer's opinion that the accuracy of the 222 ammunition, if held to the specifications of Lot U28M104, will be satisfactory for vermin shooting and that the bullet disintegrates satisfactorily preventing dangerous ricochets.

W. E. Leek
Arms Technical Division

WEL/ml

SPECIAL TEST Final test 10-14 10L RDS Jack.

INSTRUCTIONS 721 A 280

Model 721 A Jack No. 2 Shooter Tony. Date 11/2

Gun No.	Cal. Ga.	Rds.	Ammunition Code	Rds.	Ammunition Code
425976	5	165	OK	5/125	OK.
425369	"	"	OK	"	OK
714976	"	"	OK	"	OK
425959	"	"	OK	"	OK
425800	"	"	OK	"	OK.
425903	"	"	OK	"	OK
714964	"	"	OK	"	OK
714945	"	"	OK	"	OK
425821	"	"	OK	"	OK
43009	"	"	OK	"	OK.
425986	"	"	OK	"	OK.
42543	"	"	OK	"	OK
714972	"	"	OK	"	OK

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SPECIAL TEST RD-6491

INSTRUCTIONS 721 A.

Model 721 A. Jack No. 2 Shooter Tanyo Date 11/2

Gun No.	Cal. Ga.	Rds.	Ammunition Code	Rds.	Ammunition Code
425819	5	125	OK	5 125	OK.
425836	"	"	OK	"	OK.
714946	"	"	OK	"	OK
425935	"	"	OK	"	OK
425905	"	"	OK	"	OK
714996	"	"	OK	"	OK
425843	"	"	OK	"	OK.

REMINGTON ARMS COMPANY, INC.
Ilion Research Division

cc: S.M. Alvis
D.E. Miller
R.A. Williamson
H.J. Hackman
R.B. Hurley
A.D. Gordon
W.E. Leek
R.P. Kelly
In Turn

Ilion, New York
September 10, 1959

W. A. BEST

MODEL 722 - 222 CALIBER - AUDIT FOR 1959

For your information, the above test was started 8-4-59 and completed 9-1-59. Following is the procedure and results.

Procedure

All ten rifles were fired for accuracy, three 5-shot groups, using 20 power scope, the gallery range, and Rem. 50 grain ammunition. Measurements of group size were inside to inside.

All ten rifles were field tested 40 rds. each using Remington ammunition. Each rifle was checked for unloading live ammunition.

Results

Function-wise, nine rifles were perfect. The tenth had hard failures to lock up, which was corrected by chamfering the sharp edge on the inside of the shroud.

Accuracy test showed all rifles to average within the 2" gallery specs. for this caliber.

Accuracy results are as follows:

Gun No.	Group Size	Avg.	Gun No.	Group Size	Avg.
427038	1) .9 " 2) 1.15" 3) 1.3 "	1.1 "	427386	1) 1.6 " 2) 1.75" 3) 2.1 "	1.81"
427754	1) .85" 2) 1.5 " 3) 1.2 "	1.18"	427419	1) 1.7 " 2) .9 " 3) 2.35"	1.65"

Gun No.	Group Size	Avg.	Gun No.	Group Size	Avg.
427795	1) .6 " 2) 1.2 " 3) 1.5 "	1.1 "	427013	1) 1.6 " 2) 1.95" 3) 2.25"	1.93"
427034	1) 1.5 " 2) 2.35" 3) 1.9 "	1.91"	427041	1) 1.0 " 2) 1.6 " 3) 1.6 "	1.4 "
427783	1) 1.45" 2) 2.8 " 3) 1.6 "	1.81"	426789	1) 2.2 " 2) 1.25" 3) 2.2 "	1.88"

Overall Average 1.57"

C. J. Theriault
Supervisor - Testing Unit

CJT:T

REMINGTON ARMS COMPANY, INC.
Ilion Research Division

cc: S.M. Alvis
D.E. Miller
R.A. Williamson
H.J. Hackman
R.B. Hurley
A.D. Gordon
W.E. Leek) In
R.P. Kelly) Turn

Ilion, New York
September 10, 1959

W. A. BEST

MODEL 722 - 244 CALIBER - AUDIT FOR 1959

For your information the following is the procedure and results of an audit test on the above model, which was started on 8-5-59 and completed 9-2-59.

Procedure

Ten rifles were selected from warehouse and subjected to an accuracy test. Three 5-shot groups were fired using the Rem.90 grain bullet, 20 power scope, and the 100 yd. plant range. All groups were measured inside to inside.

These ten rifles were then field tested, firing a total of 80 rds. each. The Rem. 75 grain SP, and the Rem. 90 grain SP were fired in this test (40 rds. each). Live round unloading was also checked.

Results

Functioning

There were no malfunctions, which is very satisfactory.

Accuracy Test

Two of the ten rifles averaged over the 2" gallery specs. for this caliber. ~~The remainder if measured outside to outside would have passed.~~ The results of this test are as follows:

Gun No.	Group Size		Avg.	Gun No.	Group Size		Avg.
428342	1.	2.0"		428176	1.	1.7"	
	2.	1.75"	2.11"		2.	2.25"	1.78"
	3.	2.6 "			3.	1.4 "	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Gun No.	Group Size		Avg.	Gun No.	Group Size		Avg.
428365	1.	2.3 "		428178	1.	2.6 "	
	2.	1.9 "	2.05"		2.	1.3 "	2.05"
	3.	1.95"			3.	2.25"	
428279	1.	2.1 "		428135	1.	1.8 "	
	2.	2.75"	2.28"		2.	4.2 "	2.8 "
	3.	2.0 "			3.	2.6 "	
428124	1.	2.1 "		428253	1.	2.25"	
	2.	1.8 "	2.3 "		2.	1.5 "	2.45"
	3.	3.1 "			3.	3.6 "	
428197	1.	1.45"		428246	1.	2.0 "	
	2.	2.0 "	1.48"		2.	4.0 "	2.8 "
	3.	1.0 "			3.	2.5 "	

Overall Average 2.21"

C. J. Theriault

C. J. Theriault
Supervisor - Testing Unit

CJT:T

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126460

cc: S.M. Alvis
D.E. Miller
R.A. Williamson
E.J. Beckman
T.O. DeHaven
W.E. Look } In
R.L. St.John } Turn

Ilion, New York
April 15, 1958

W. A. BEST

MODEL 720 - 308 MAGNUM - PILOT LINE TEST

At your request ten of the above guns were selected on 4/11/58 and subjected to test.

Procedure

All ten guns were fired three 5-shot groups for accuracy on the 100 yd. range, using a 15-power scope mounted on the barrel and receiver.

Then all ten guns were fired 50 rounds each in field test.

Conclusions

Accuracy-wise, all guns passed the 2" gallery specs. measuring inside to inside. However, there are three conditions which could be corrected to help better the accuracy:

1. The bedding of the fore end on some guns is very poor.
2. Engagement of the sears in five guns appears to be too great.
3. Takedown screws were loose.

There was no significant change in point of impact.

Function

Function-wise, there were no malfunctions that occurred in field test. All rifles unloaded live ammunition satisfactorily. Three of the ten rifles had safeties that were hard to put in on position.

Accuracy

Gun No.		Group Size	Point of Impact			
1	1)	2.8"	.1"	right	6.2"	high
414737	2)	1.3"	1.1"	left	6.2"	"
	3)	1.8	.75"	"	5.9"	"
	Avg.	1.96"				

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126460

Gun No.		Group Size	Point of Impact			
2	1)	1.3"	1.7"	right	3.2"	high
415283	2)	3.0"	1.0"	"	2.6"	"
	3)	1.65"	1.9"	"	3.0"	"
	Avg.	1.98"				
3	1)	2.8"	2.3"	left	.5"	high
414917	2)	1.5"	2.8"	"	1.2"	"
	3)	1.6"	2.0"	"	1.2"	"
	Avg.	1.96"				
4	1)	1.6"	1.1"	right	1.1"	low
414901	2)	1.55"	.9"	"	1.2"	"
	3)	1.73"	.5"	"	1.1"	"
	Avg.	1.63"				
5	1)	2.3"	.9"	left	1.5"	high
414984	2)	2.3"	.4"	"	1.65"	"
	3)	2.0"	.5"	"	1.5"	"
	Avg.	2.36"				
6	1)	2.1"	.5"	Right	1.0"	low
414872	2)	3.0"	1.4"	"	1.8"	"
	3)	2.0"	1.25"	"	1.6"	"
	Avg.	2.3"				
7	1)	1.85"	.3"	right	.65"	high
415339	2)	2.30"	.1"	"	.5"	"
	3)	1.16"	0		.2"	"
	Avg.	1.76"				
8	1)	2.1"	1.75"	right	2.85"	high
414865	2)	1.65"	1.95"	"	2.75"	"
	3)	1.5"	1.75"	"	2.40"	"
	Avg.	1.75"				
9	1)	1.5"	.65"	right	2.3"	high
393922	2)	2.15"	.60"	"	1.95"	"
	3)	1.8"	.35"	"	2.0"	"
	Avg.	1.81"				

Gun No.	Group Size		Point of Impact			
10	1)	1.65"	.35"	right	3.15"	high
415277	2)	1.35"	.3"	"	2.6"	"
	3)	1.30"	.45"	"	2.9"	"
	Avg.	1.43"				

C. J. Therimult

C. J. Therimult
Supervisor - Testing Unit

CJT:T

9-10-57

721 Test

(1) (2) (3)

CC: D. E. Miller
H. J. Hackman
E. A. Williamson
E. B. Wallin
E. S. Hurley
A. D. Gordon
C. W. Fisher
W. J. Scott
C. D. Hunt - Dept.

Ilion, New York
August 30, 1957

R. E. WRIGHT

M/721-722 COMBINED TEST & TARGET

Effective Tuesday, 9-3-57, the separate gallery testing operation on all calibers M/721-722 except the 222 and 244 will be discontinued. Functional testing will be combined and done with the targeting operation in accordance with the attached procedure.

Approximately twenty nine hundred (2900) guns have been processed through the comparison test program initiated on 6-10-57. All reject guns from both the regular gallery test and the special "target test" have been submitted to an additional test by Dept. 83 personnel for verification. Results indicate that functional specifications on all but the 222 and 244 calibers can be controlled at target.

In addition to maintaining our present quality level, the new procedure will realize a substantial reduction in cost. Hi-spot estimates show a combined ammunition and labor savings of $23.20/100 guns on the 30-06, 270, 300 H & H, 257, 300 Sav. and 308 calibers.

Comparison tests on the 222 and 244 calibers will continue for an indefinite period for additional information and study. It is hoped that these guns can be included in the combined test at a later date.

Attached is a new procedure covering the gallery testing of these two calibers.

W. A. Best, Supervisor
Product Testing Specs.

by
R. F. Kerr

RFK:I
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Form #85-3 M1 Test Rem

Tester's Name : _____

Date : _____

M/721-722 SPECIAL "TARGET TEST"

Truck No.	Gun No.	Cal.	Gun Serial No.	Results of Test Bullet #1 - Gr.	No. Rds.	Bullet #2 - Gr.	No. Rds.	Disposition
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Form #85-4 721 Test Pull

Tester's Name: _____

Date: _____

M/721-722 REGULAR GALLERY TEST

Truck No.	No. Guns in Truck	Cal.	Gun Serial No.	Results of Test		Disposition
				Bullet #1 - Gr.	Bullet #2 - Gr.	

CC: D. E. Miller
H. J. Hackman
R. A. Williamson
E. B. Wallin
R. B. Marley
A. D. Gordon
S. W. Fisher
W. J. Scott
C. D. Hunt - Bdpt.

Ilion, New York
June 5, 1957

R. E. WRIGHT

SPECIAL "TARGET - TEST" - M/721-722

Effective Monday, 6-10-57, we will start a series of comparison tests on the subject models. The tests will run for a period sufficiently long to accumulate adequate data for properly evaluating the feasibility and economics of a combined accuracy and functional test.

During the trial testing period, the regular gallery tester will be governed by the current plant center fire testing procedure with the following exceptions:

1. Test results will be recorded on special test report form #85-4. One sheet will be used for each truckload of guns and will show truck number, number of guns on truck, caliber and the serial number of guns with malfunctions. Malfunctions will be listed under bullet type and by sequence. Tester will sign and date each sheet and see that they are delivered to the writer daily.

2. Reject guns will remain on truck and proceed with balance of truck to targeting area for special "Target - Test".

3. The tester will make out test reject ticket in the usual manner showing date, gun serial number, truck number, assembler's number, tester's initials, malfunction (type and sequence), and if a repair, the number of times back. The only addition to present information is the truck number. This will be inserted on the lower portion of the ticket between the assembler's number and tester's initials.

4. Test reject tickets will be placed in truck number envelope attached to truck. They are not to be removed from envelope by anyone until final inspection. At this point, the inspector will put them with the gun involved.

All caliber M/721 and M/722 guns, both new and repairs, will be moved to the production targeting area immediately following the regular gallery test. Here they will be given a special "Target - Test" by production targeting personnel.

Guns will be functionally tested during regular targeting operation and the results recorded by gun and truck number on special test report form #85-3. One sheet will be used for each truckload of guns. The targeter will sign and date each sheet and show truck number, number of guns on truck, caliber, number of rounds fired through each gun and the serial number of those guns found with malfunctions. Malfunctions are to be listed by bullet type and sequence. Test results will be delivered to the writer daily.

The following procedure is to be used by targeter:

Completely load Magazine (222 Cal. - 5 rounds, 300 H & H - 3 rounds, all others - 4 rounds). Feed and fire all rounds required for regular seating and targeting. If the last shell in magazine is not needed, it should be fed into chamber and ejected unfired.

The targeter will single load and fire any additional rounds needed to satisfy accuracy standards. However, these rounds are not to be included as part of the test record.

While these comparison tests are being conducted, the targeter will follow current testing procedure for calling and recording malfunctions, that is, he will check for loading, feeding, firing, extracting and ejecting.

Guns with no malfunctions will pass the functional test. Guns with one (1) or more malfunctions will be rejected.

Two (2) bullet weights are to be used on each truckload of guns except the 300 H & H and 222 Rem. Calibers where only one bullet weight is prescribed. One side or one half of truck is to be tested with the heavy bullet; the other side or second half with the light bullet.

If more than one (1) gun on a truck malfunctions with one bullet type, test all guns on truck with that particular bullet. This will be in addition on those guns being fired with the second type bullet.

Guns will be accepted or rejected for accuracy in accordance with present targeting standards. However, the targeter may make an allowance for elevation on point of impact for different bullet types.

Reject guns are to be left on truck and moved to final inspection with passed guns. The targeter will fill out a <u>test reject</u> ticket furnishing the same items. of information as the regular gallery tester. Each ticket will be placed in the trigger bow of the gun involved.

<u>Target reject</u> tickets will also be made out by the targeter. These will be handled in the usual manner.

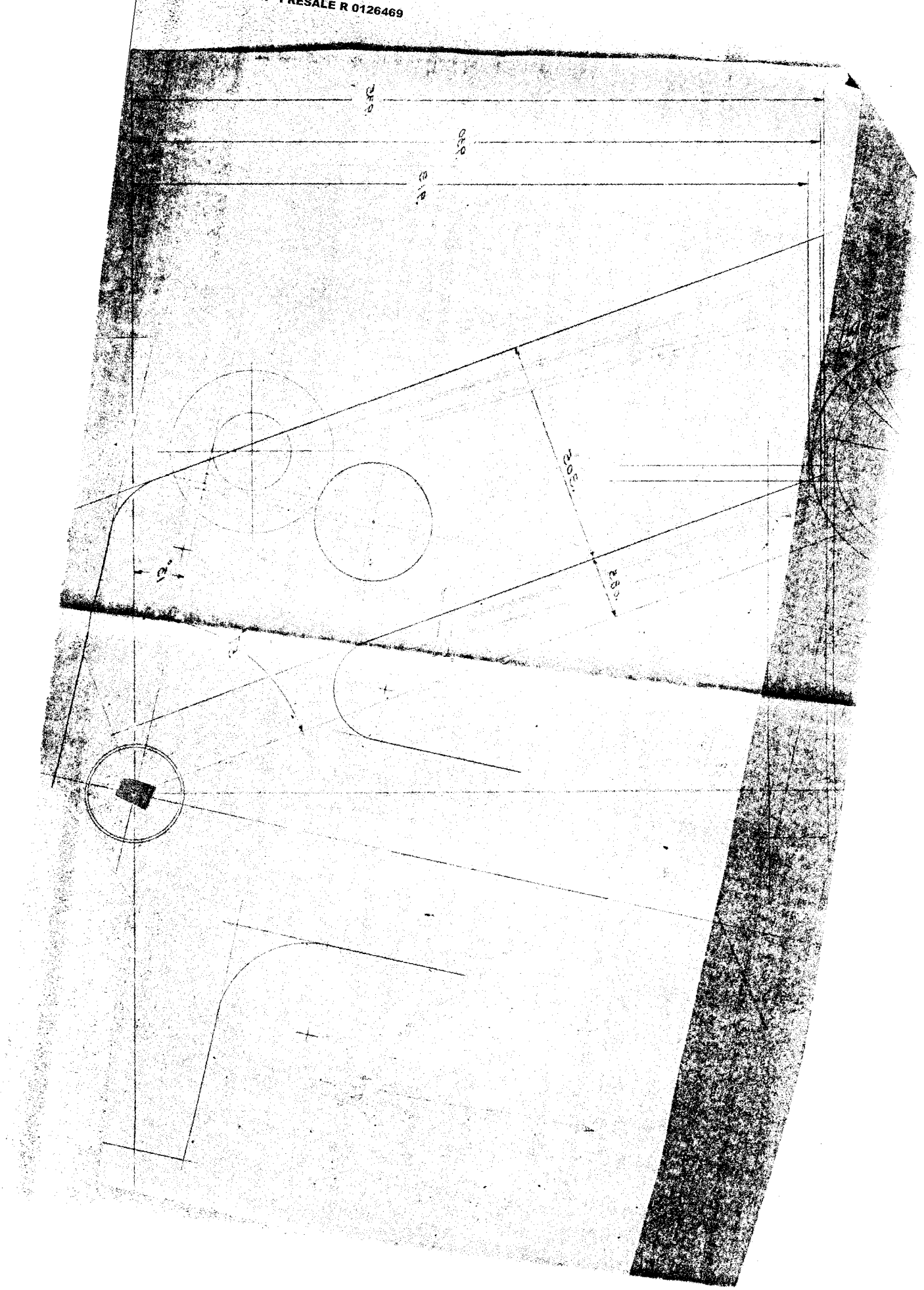
If there are any questions in connection with the above or any assistance required during the trial testing period, please contact the writer.

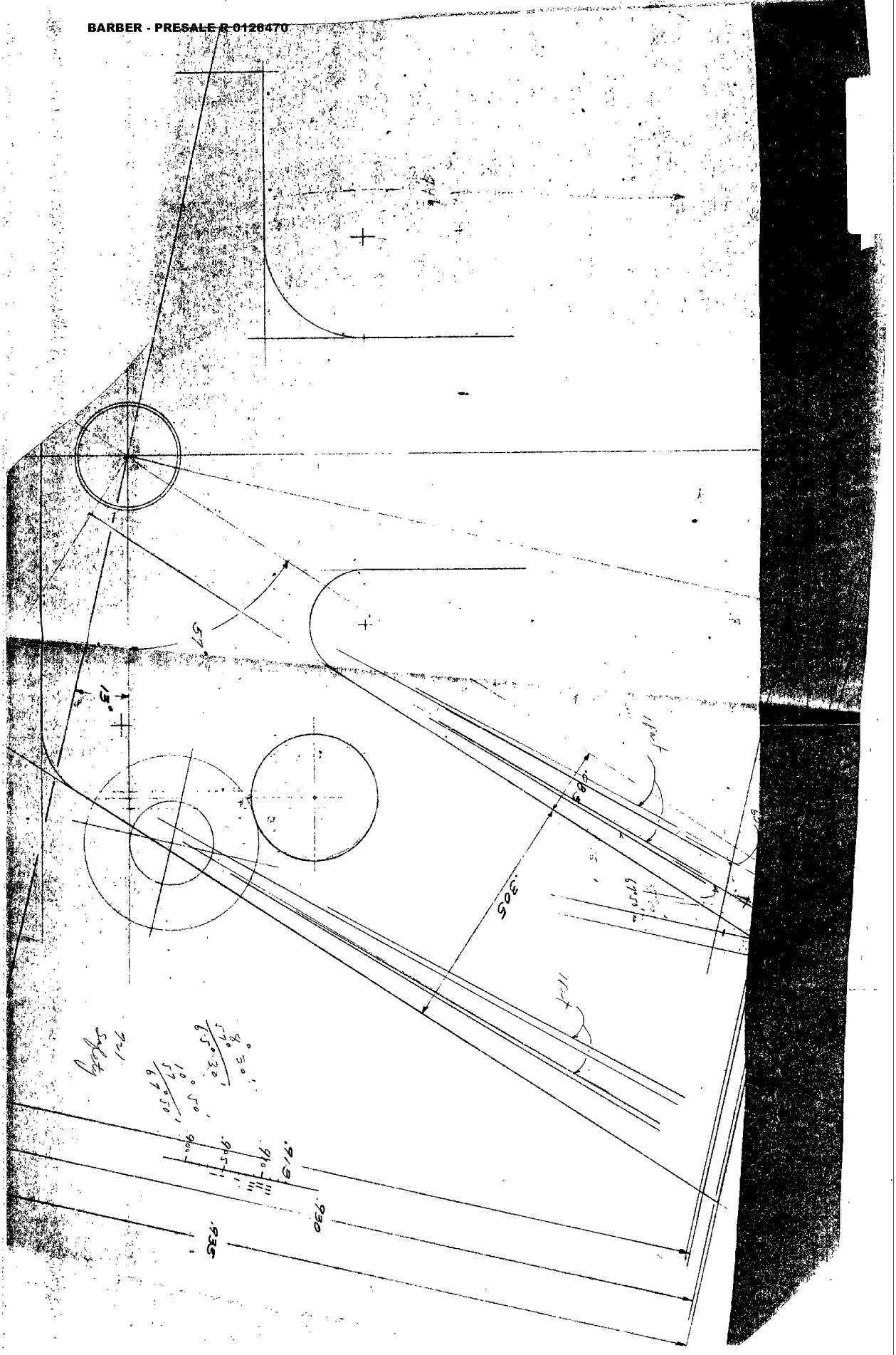
W. A. Best, Supervisor
Product Testing Specs.

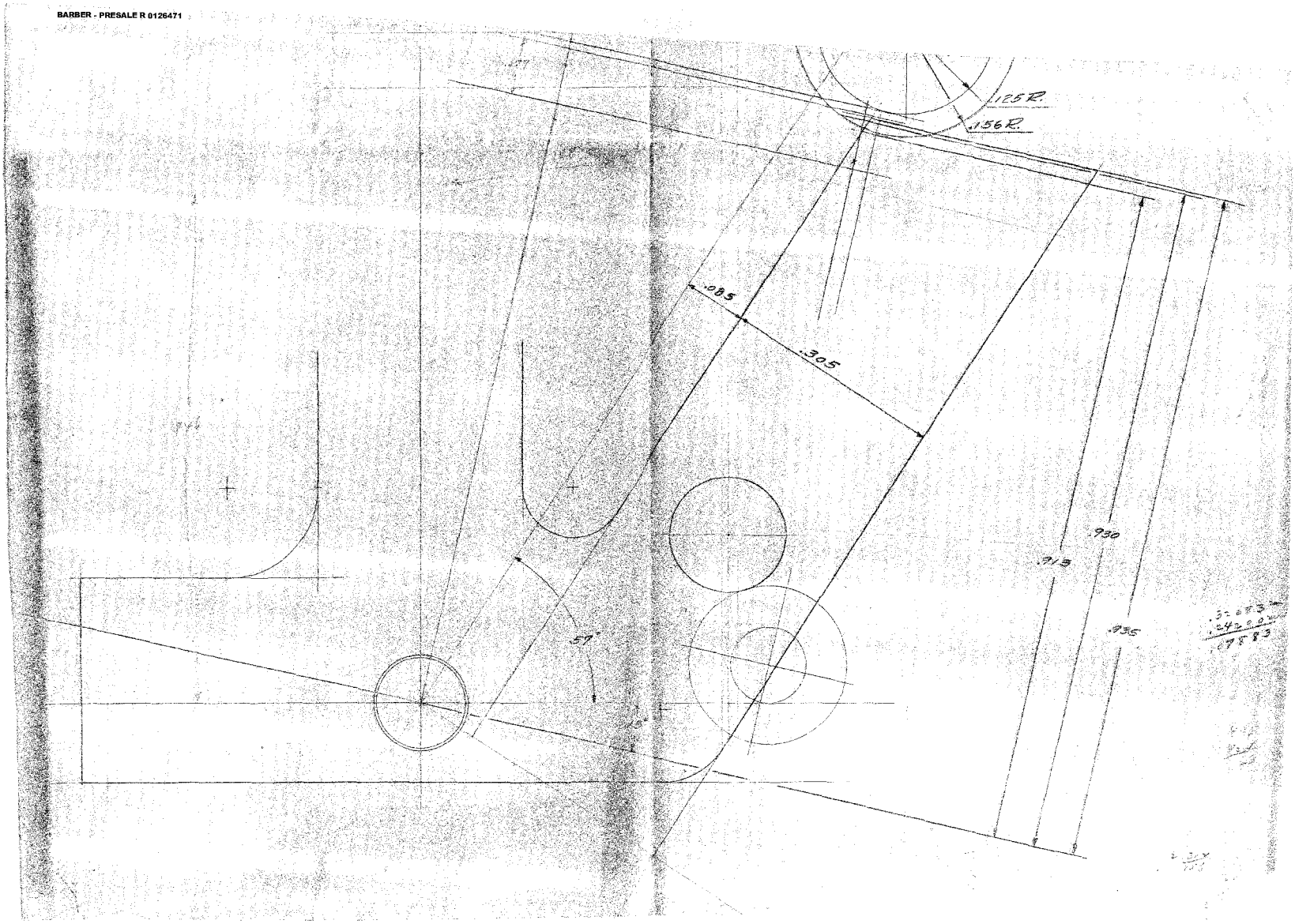
by _____
R. F. Kerr

RFK:I

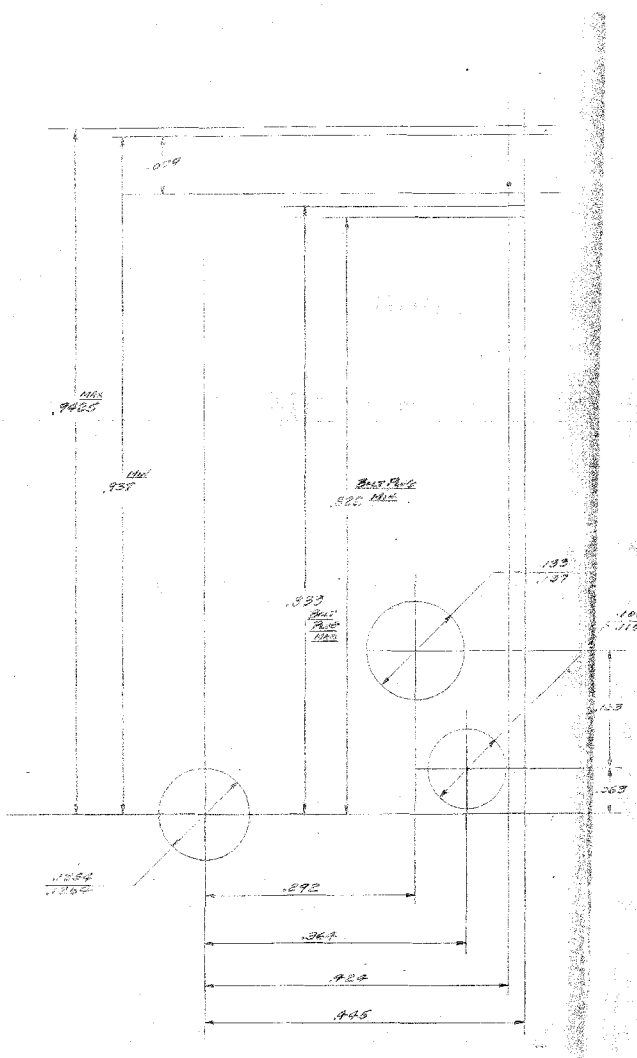
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

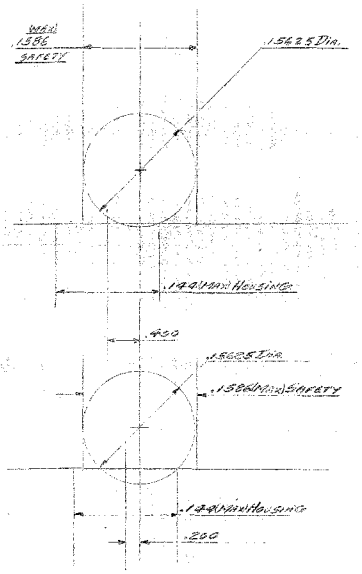



305
930
930

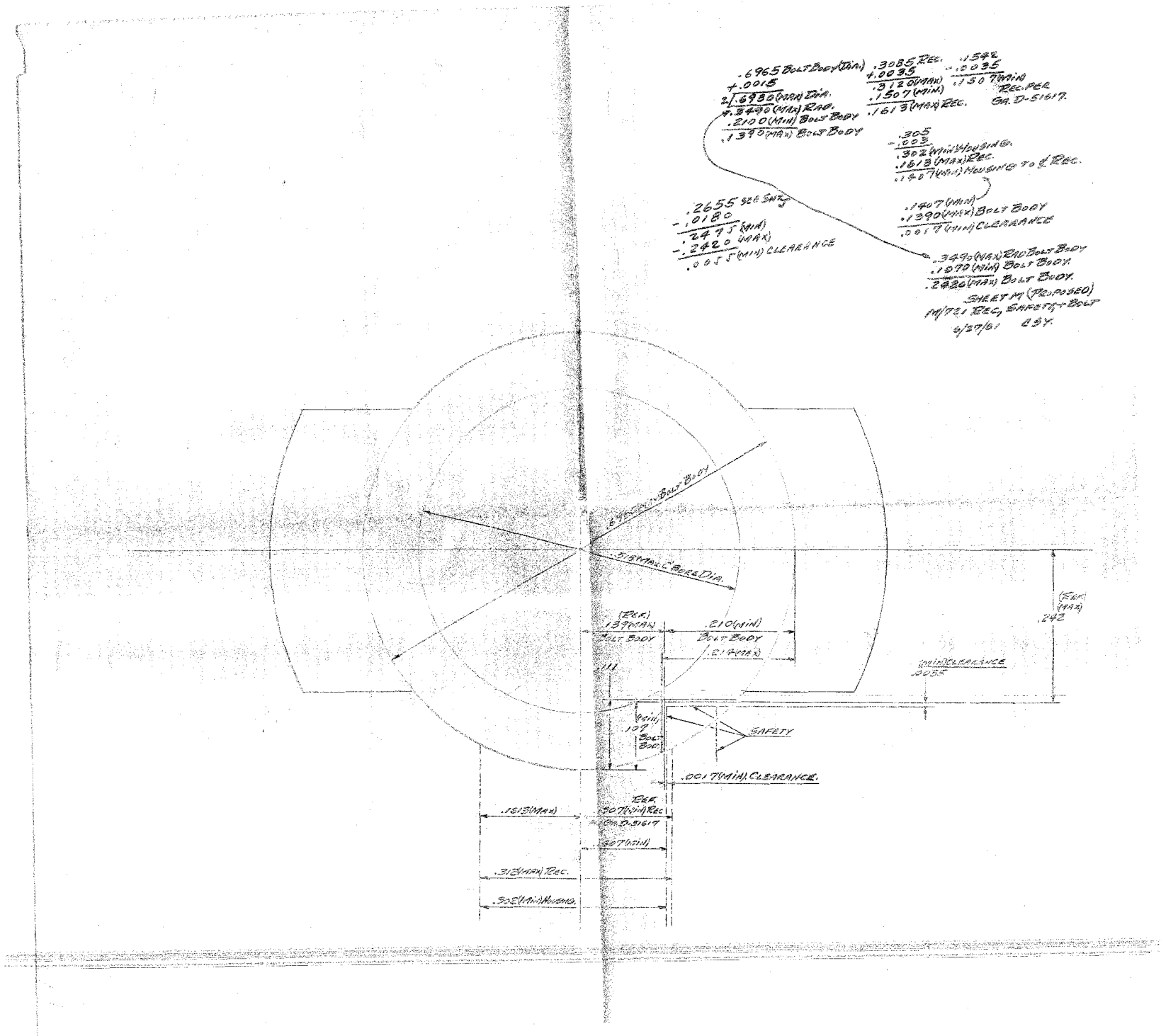


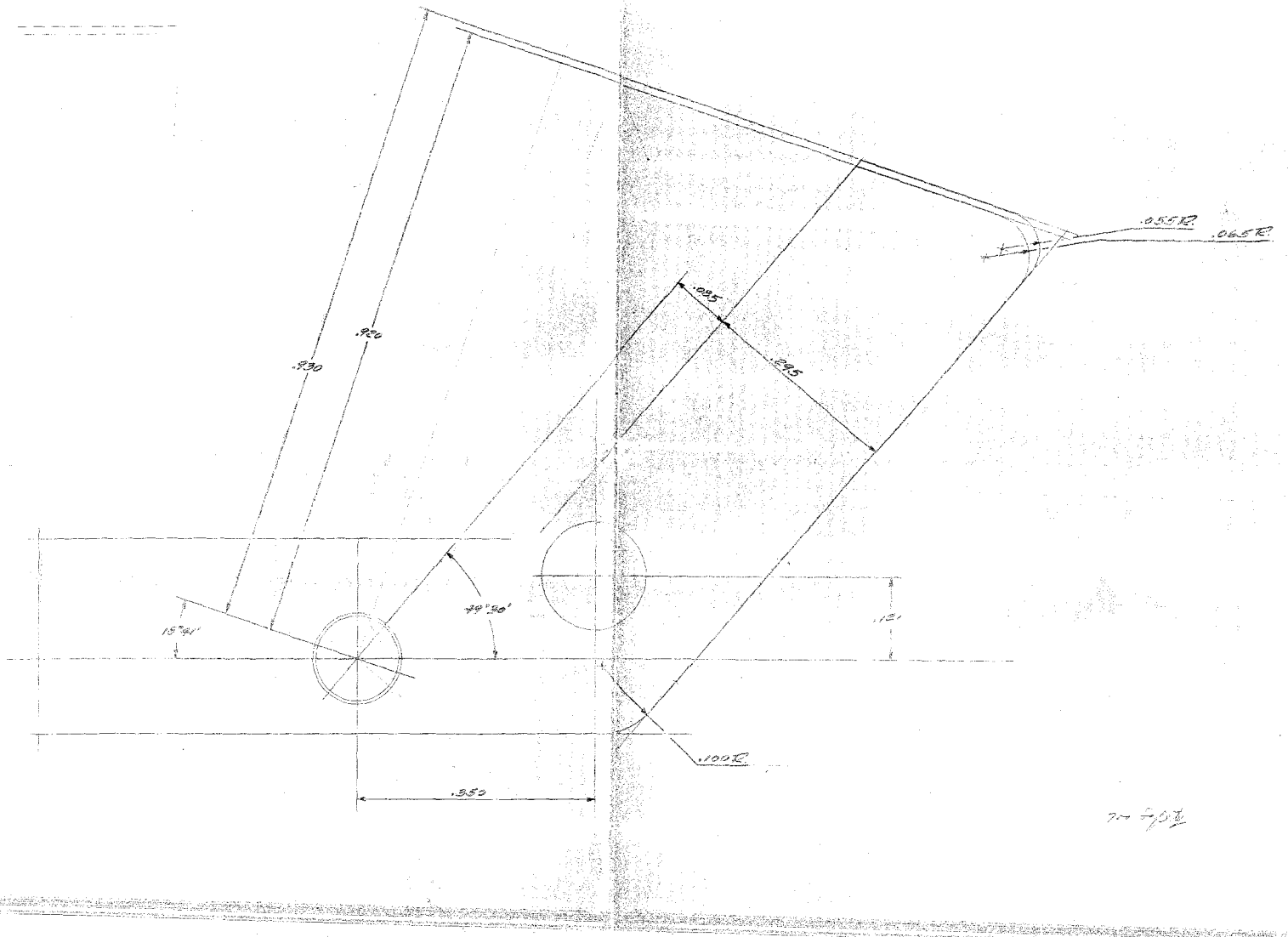
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON


.070
MAX
.9655
MIN
.935
Bolt Face
.820 MIN.
.933
Bolt Face
MIN
.193
.197
.105
.113
.153
.363
.1154
.1164
.892
.967
1.042
1.096


WELL
1.586
SAFETY
1.5625 Dia.
1.441 MAX HOUSING
.420
1.5625 DIA.
1.386 MAX SAFETY
1.441 MAX HOUSING
.200

700 Housing


.6965 BOLT BODY (DIA)
+.0015
2 [.3480 (MAX) DIA.
+.3490 (MAX) RAD.
.2100 (MIN) BOLT BODY
.1390 (MAX) BOLT BODY
.3085 REC.
+.0035
.3120 (MAX)
.1507 (MIN)
.1613 (MAX) REC.
.1542
-.0035
.1507 MIN
REC. PER
DR. D-51617.
.305
-.003
.302 (MIN) HOUSING
.1613 (MAX) REC.
.1507 (MIN) HOUSING TO ℄ REC.
.2655 SEE SHT 5
-.01180
.2475 (MIN)
-.2420 (MAX)
.0055 (MIN) CLEARANCE
.1907 (MIN)
.1390 (MAX) BOLT BODY
.0017 (MIN) CLEARANCE
.3490 (MAX) RAD BOLT BODY
.1870 (MIN) BOLT BODY.
.2826 (MAX) BOLT BODY.
SHEET 4 (PROPOSED)
M/T21 REC, SAFETY + BOLT
6/27/61 CSY.
.5198 (MAX) BOLT BODY
.5180 MAX. C BORE DIA.
(REF.)
.137 (MAX)
BOLT BODY
.210 (MIN)
BOLT BODY
.214 (MAX)
.111
(REF.)
(MAX)
.242
.005 (MIN) CLEARANCE
.107
(MIN)
BOLT
BODY
SAFETY
.0017 (MIN) CLEARANCE.
.1613 (MAX)
REF.
.307 (MIN) REC
(DR. D-51617
.307 (MIN)
.318 (MAX) REC.
.308 (MIN) HOUSING

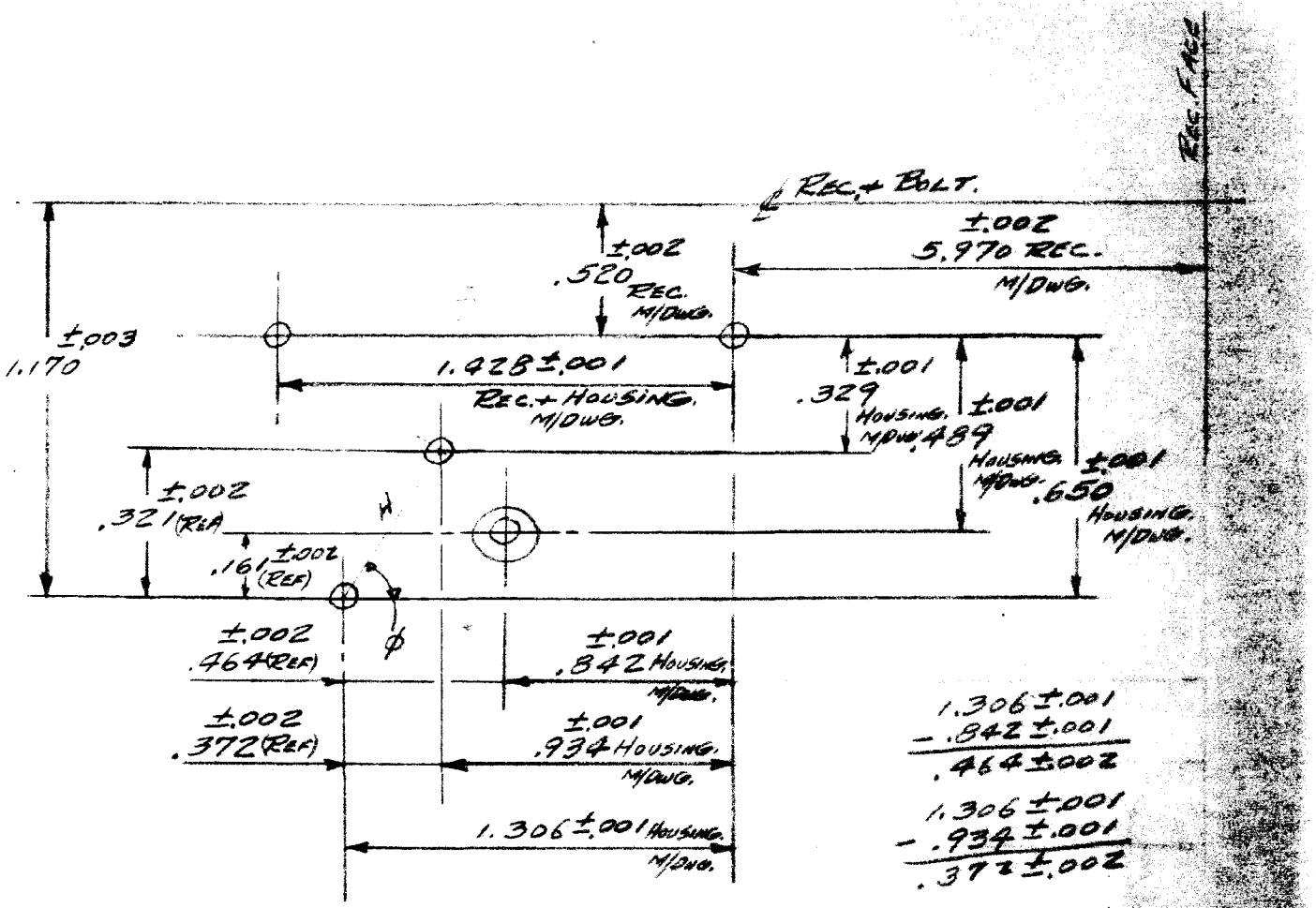


CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BY _____ DATE 7/15/ SUBJECT M/T21 Rec, SAFETY, + SHEET NO. A OF _____

CHKD. BY _____ DATE _____ BOLT. JOB NO. _____

CURRENT



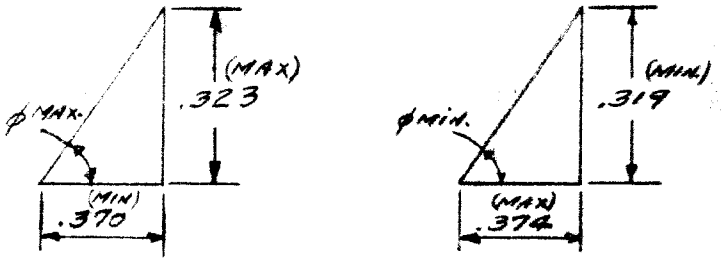
$1.306 \pm .001 - .842 \pm .001 = .464 \pm .002$

$1.306 \pm .001 - .934 \pm .001 = .372 \pm .002$

$.650 \pm .001 - .489 \pm .001 = .161 \pm .002$

$.650 \pm .001 - .329 \pm .001 = .321 \pm .002$

$.650 \pm .001 - .520 \pm .002 = 1.170 \pm .003$



$\text{Tan}\,\phi_{MAX} = \frac{.323}{.370} = .87297 = 41°7'12''$

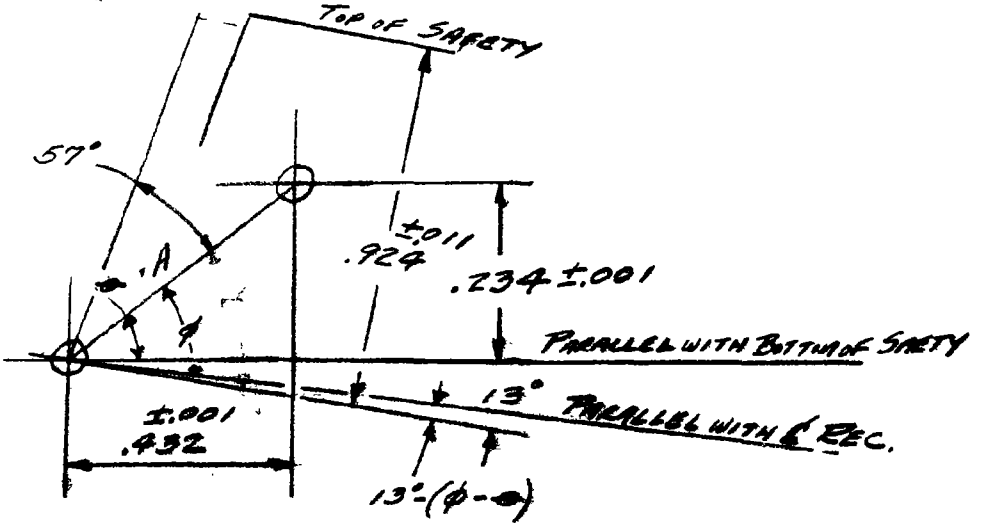
$\text{Tan}\,\phi_{MIN} = \frac{.319}{.374} = .85294 = 40°27'44''$

$H(MAX) = \sqrt{.323^2 + .374^2} = .49417 (MAX)$

$H(MIN) = \sqrt{.319^2 + .370^2} = .48853 (MIN)$

$H(MEAN) = .4913 5$

SAFETY



$A(MAX) = \sqrt{.433^2 + .233^2} = .49266$

$A(MIN) = \sqrt{.431^2 + .233^2} = .48995$

$A(MEAN) = .49131$

$\tan\theta(MAX) = \frac{.235}{.431} = .54524 = 28°36'3''$

$\tan\theta(MIN) = \frac{.233}{.433} = .53811 = 28°17'6''$

$\phi(MAX) = 41°7'12''$

$-\theta(MIN) = 28°17'6''$

$\phi-\theta(MAX) = 12°50'6''$

$\phi(MIN) = 40°27'44''$

$-\theta(MAX) = 28°36'3''$

$\phi-\theta(MIN) = 11°51'41''$

$13°$

$12°50'6''$

$0°9'54'' = 13°-(\phi-\theta)(MIN)$

$13°$

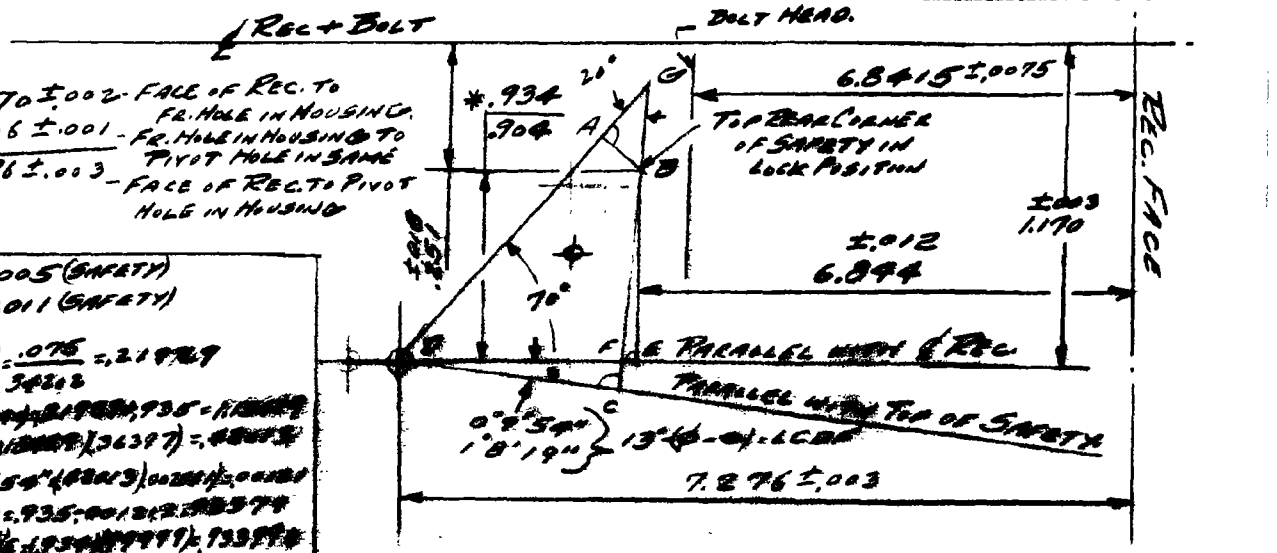
$11°51'41''$

$1°8'19'' = 13°-(\phi-\theta)(MAX)$

BARBER - PRESALE R 0126477

BY CJT DATE 8/21/67 SUBJECT M/721 REC., SAFETY + BOLT CURRENT SHEET NO C OF

CHKD. BY DATE JOB NO.



AB = .080 ±.005 (SAFETY)

BC = .924 ±.011 (SAFETY)

BG = AB(MAX) / SIN 20° = .076 / .3420 = .222

GC = BG + BC(MAX) = .222 + .935 = 1.157

DC = GC tan 20° = 1.157 (.3639) = .421

FC = DC sin 0°9'54" = .421 (.0172) = .007

BF = BC(MIN) - FC = .935 - .007 = .928

BE = BF cos 1°8'19" (MAX) = .928 (.9997) = .928

FD = BE / cos 1°8'19" = .928 / .9997 = .929

FE = BE tan 0°9'54" = .928 (.0172) = .016

DE = FD + FE = .929 + .016 = .945

BG = AB(MAX) / SIN 20° = .076 / .3420 = .222

GC = BG + BC(MIN) = .222 + .913 = 1.135

DC = GC tan 20° = 1.135 (.3639) = .413

FC = DC sin 1°8'19" = .413 (.0200) = .008

BF = BC(MIN) - FC = .913 - .008 = .905

BE = BF cos 1°8'19" (MIN) = .905 (.9997) = .905

FD = BE / cos 1°8'19" = .905 / .9997 = .905

FE = BE tan 1°8'19" = .905 (.0200) = .018

DE = FD + FE = .905 + .018 = .923

.923 (MIN)
.941 (MAX)
.869
.932 ±.009 - (SAFETY) PIVOT HOLE TO POSSIBLE INTERFERING CORNER OF SAFETY.

7.276 ±.003
- .932 ±.009
6.844 ±.012 - REC. FACE TO PT. OF INTERFERENCE OF SAFETY

6.8415 ±.0075 - REC. FACE TO BOLT HEAD

1.170 ±.003
- .929 ±.016
.251 ±.018 - ℄ BOLT TO TOP REAR CORNER OF SAFETY IN LOCK POSITION

6.844 ±.012 = 6.856 (MAX) / 6.832 (MIN) REC. FACE TO PT. OF INTERFERENCE (DIM. A)

6.8415 ±.0075 = 6.849 (MAX) / 6.834 (MIN) REC. FACE TO BOLT HEAD (DIM. B)

6.856 (MAX) DIM. A
6.834 (MIN) DIM. B
.022 (MAX) INTERFERENCE BETWEEN BOLT HD. + SAFETY

6.849 (MAX) DIM. B
6.832 (MIN) DIM. A
.017 (MAX) CLEARANCE BETWEEN BOLT HD. + SAFETY

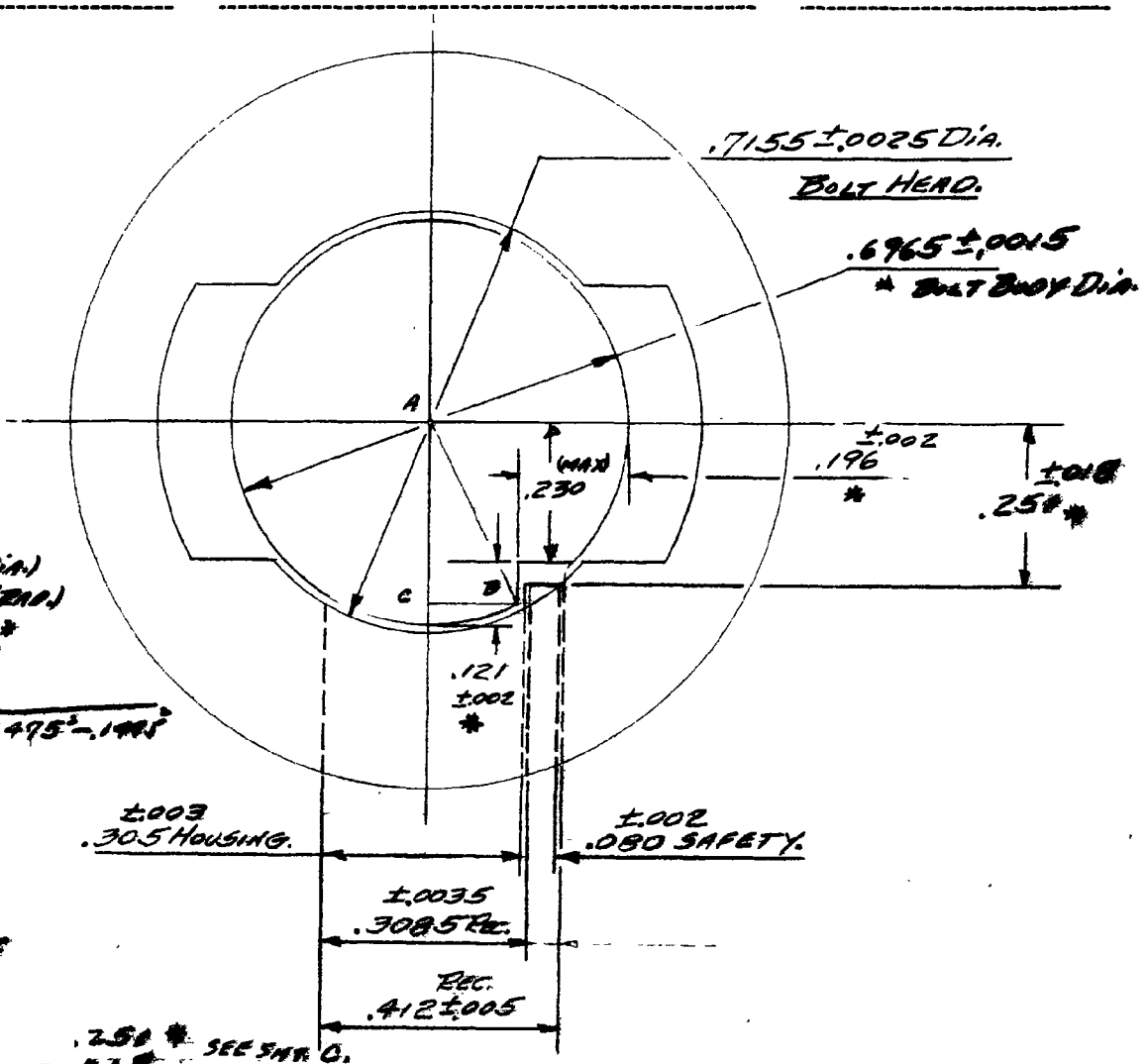
BY CSY DATE 6/3/11 SUBJECT M/92 Rec, Safety + Bolt

CHKD. BY _____ DATE _____ Current

SHEET NO. D OF _____

JOB NO. _____

BARBER - PRESALE R 0126478



.6965 *
− .0015
2 | .6950 (MIN) (DIA.)
.3475 (MIN) (RAD.)
− .1980 (MAX) *
.1495 (MIN)

$AC = \sqrt{AB^2 - BC^2} = \sqrt{.3475^2 - .1495^2}$

AC = .31369 (MIN)

.31369 (MIN)
− .26400 (MAX)
.04969 (MIN) Lock

.6965
+ .0015
2 | .6980 (MAX) (DIA.)
.3490 (MAX) (RAD.)
− .1190 (MIN) *
.2300 (MAX)

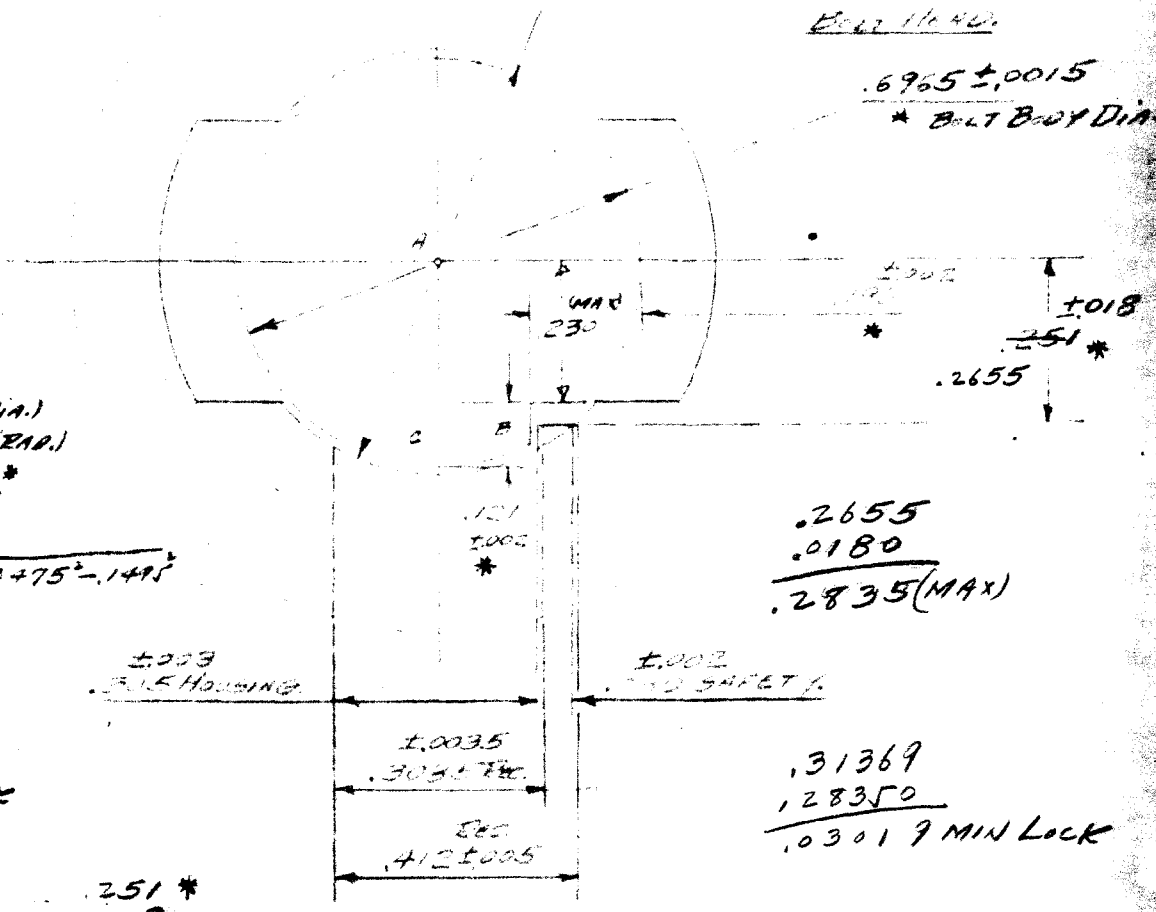
.250 *
− .017 SEE SHT 6.
.233 (MIN)
.230 (MAX)
.003 Positional Tolerance

BY CSY DATE 9/27/11 SUBJECT Mfg. Rec. Safety + Bolt SHEET NO. D OF

CHKD. BY DATE JOB NO.

.1115 ±.0015 Dia.
Bolt Head

.6965 ±.0015
* Bolt Body Dia.



.6965 *
−.0015
2 .6950 MIN (Dia.)
.3475 MIN (Rad.)
−.1180 MAX *
.1495 (MIN)

$AC = \sqrt{AB^2 - BC^2} = \sqrt{.3475^2 - .1495^2}$

AC = .31369 (MIN)

.31369 (MIN)
−.26900 (MAX)
.04469 (MIN) Lock

.2655
.0180
.2835 (MAX)

.31369
.28350
.03019 MIN Lock

.6965
+.0015
2 .6980 (MAX) (Dia.)
.3490 (MAX) (Rad.)
−.1190 (MIN) *
.2300 (MAX)

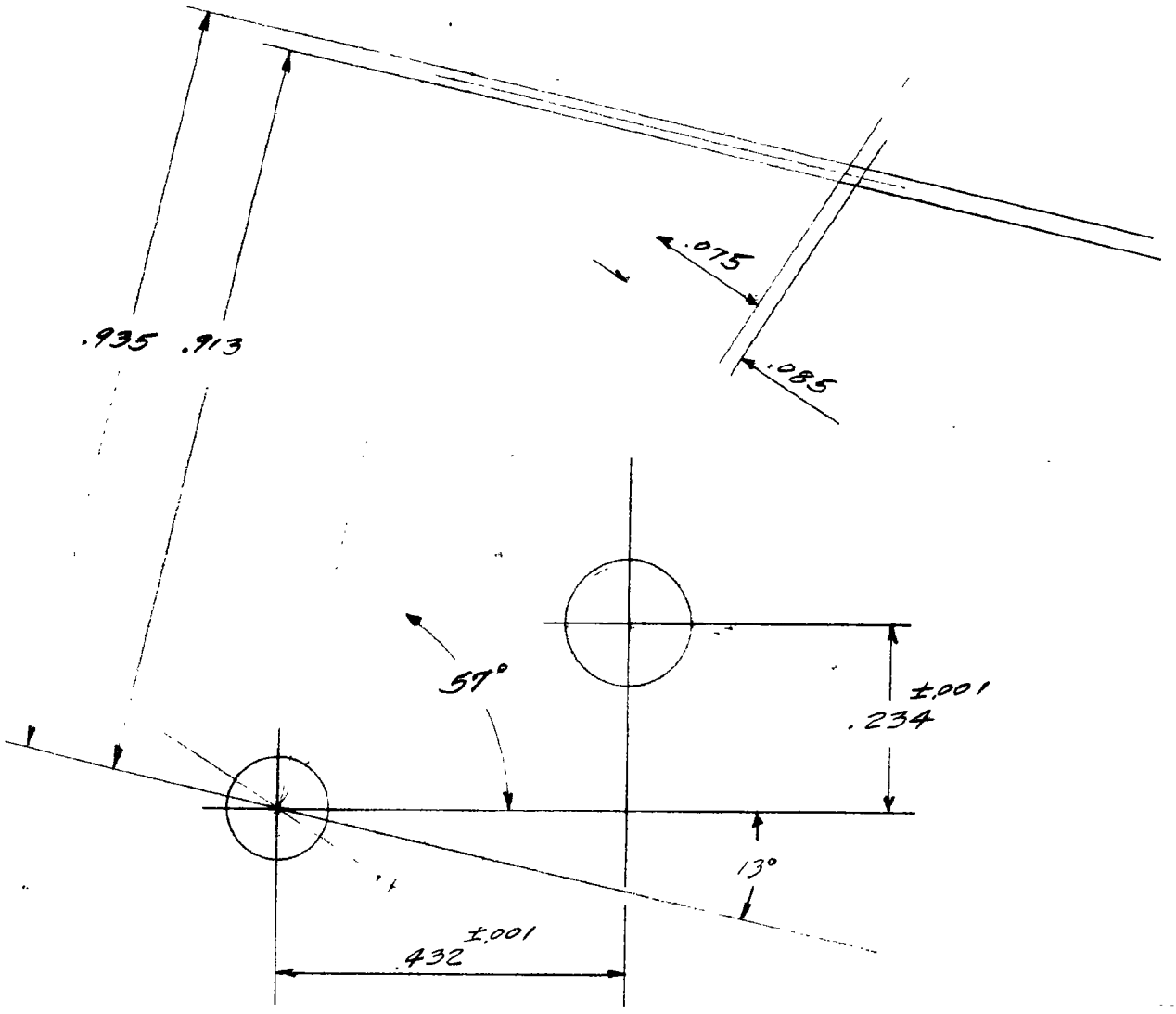
.251 *
−.018
.233 (MIN)
.230 (MAX)
.003 (MIN) CLEARANCE

.265
−.0180
.2475 (MIN)
.230 (MAX)
.0175 (MIN) CLEARANCE

SAFETY

MEAN LAYOUT

10 TO 1



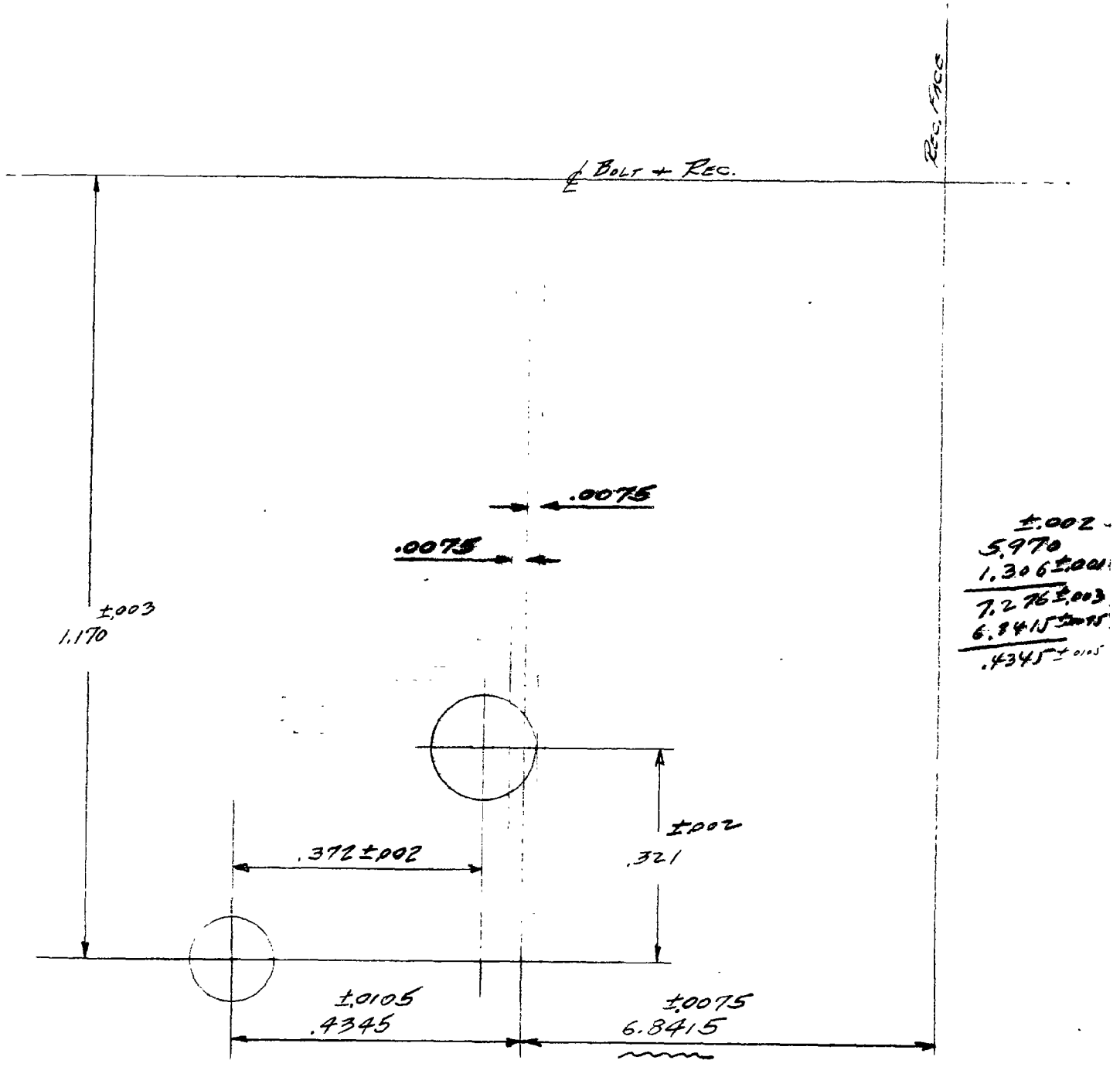
CBY 6/27/64 SUBJECT M/T2 REC., SAFETY + BOLT CURRENT SHEET NO. 6 OF

CHKD. BY DATE JOB NO.

REC, BOLT, SAFETY, + HOUSING

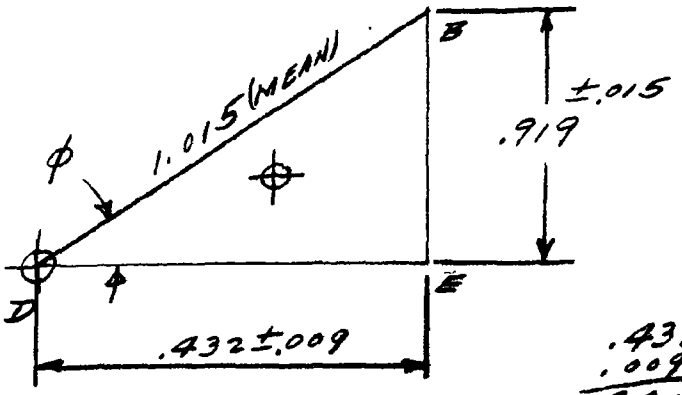
MEAN LAYOUT

10 TO 1



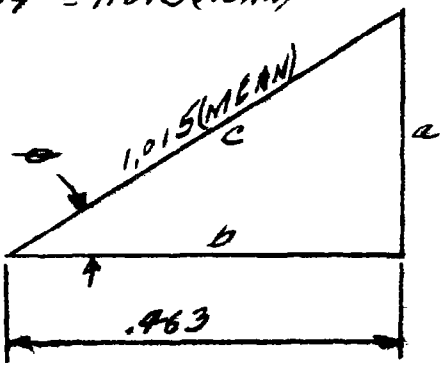
BY C.E.K. DATE 4-9-86 SUBJECT M/721 REC. SAFETY + BOLT. SHEET NO. 4 OF

CHKD. BY DATE PROPOSED JOB NO.



$BD = \sqrt{.432^2 + .919^2} = 1.015 \text{ (MEAN)}$

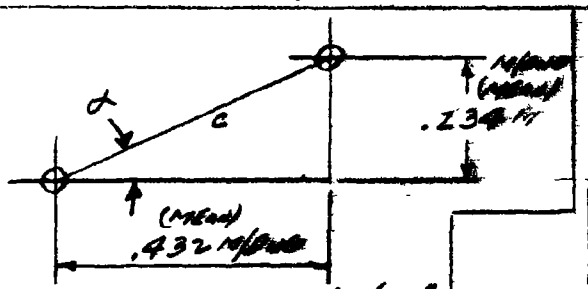
.432
.009
.441 (MAX)
.022 (INTERFERENCE) (MAX)
.463 (MAX)



$\text{Tan } \phi \text{ (MEAN)} = \frac{.919}{.432} = 64°29'23''$

$\text{Cos } \phi \text{ (MEAN)} = \frac{.463}{1.015} = 62°51'37''$

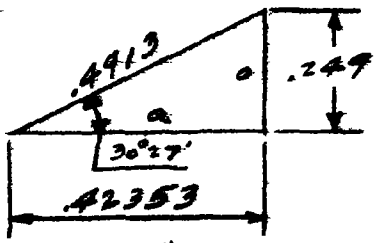
64°49'23"
62°51'37"
1°57'46" or 2°A



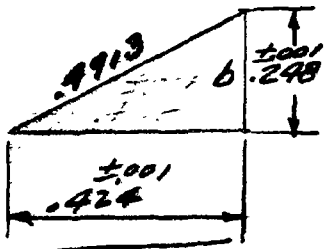
$\text{Tan } \alpha = \frac{.234}{.432} = .54167 = 28°26'35''$

$c = \sqrt{.432^2 + .234^2} = .4913$

28°27'
+ 2°
30°27'



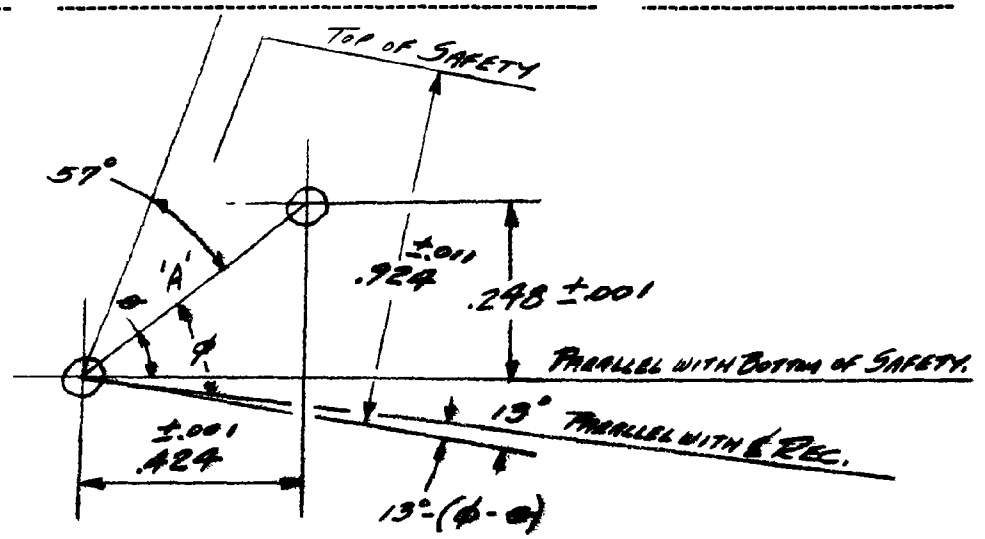
$o = (.4913)(\sin 30°27') =$
$o = (.4913)(.50679) = .24899$
$a = (.4913)(\cos 30°27')$
$a = (.4913)(.86207) = .42353$



$b = \sqrt{.4913^2 - .424^2}$
$b = .24819$

BY _____ DATE _____ SUBJECT M/721 REC, SAFETY, + BOLT PROPOSED SHEET NO. 1 OF _____

CHKD. BY _____ DATE _____ JOB NO. _____



$A(MAX) = \sqrt{.425^2 + .249^2} = .49257$

$A(MIN) = \sqrt{.423^2 + .247^2} = .48983$

$A(MEAN) = .49120$

$\text{Tan}\,\Theta(MAX) = \frac{.249}{.423} = .58865 = 30°29'$

$\text{Tan}\,\Theta(MIN) = \frac{.247}{.425} = .58118 = 30°9'35''$

$\phi(MAX) = 41°7'12''$

$-\ \Theta(MIN) = 30°9'35''$

$\phi - \Theta(MAX) = 10°57'37''$

$\phi(MIN) = 40°27'44''$

$-\ \Theta(MAX) = 30°29'$

$\phi - \Theta(MIN) = 9°58'44''$

$13°$

$-\ 10°57'37''$

$2°\ 2'\ 23'' = 13°-(\phi-\Theta)(MIN)$

$13°$

$-\ 9°\ 58'\ 44''$

$3°\ 1'\ 16'' = 13°-(\phi-\Theta)(MAX)$

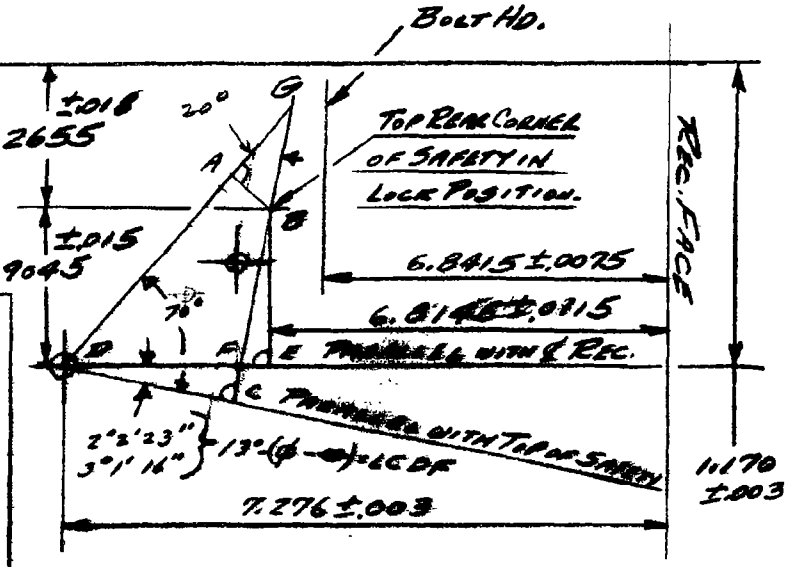
BY CSY DATE 6/27/61 SUBJECT M/721 REC SAFETY + BOLT — PROPOSED SHEET NO. 1 OF

CHKD. BY DATE JOB NO.

℄ REC + BOLT.

BOLT HD.

5.970 ± .002 - FACE OF REC TO FR HOLE IN HOUSING.
1.306 ± .001 - FR. HOLE IN HOUSING TO PIVOT HOLE IN SAME.
7.276 ± .003 - FACE OF REC. TO PIVOT HOLE IN HOUSING



AB = .080 ± .005 (SAFETY)
BC = .914 ± .011 (SAFETY)

$BG = \frac{AB(MIN)}{\sin 20°} = \frac{.075}{.34202} = .21929$

GC = BG + BC(MAX) = .21929 + .935 = 1.15429

DC = GC tan 20° = (1.15429)(.36397) = .42013

FC = DC sin 2°2'23" = (.42013)(.03559) = .01495

BF = BC(MAX) - FC = .935 - .01495 = .92005

BE = BF cos ∠FBE(MIN) = (.92005)(.999366) = .91947

$FD = \frac{DC}{\cos 2°2'23"} = \frac{.42013}{.999366} = .4204$

FE = BE tan 2°2'23" = (.91947)(.03559) = .03272

DE = FD + FE = .4204 + .03272 = .45312

$BG = \frac{AB(MAX)}{\sin 20°} = \frac{.085}{.34202} = .24852$

GC = BG + BC(MIN) = .24852 + .913 = 1.16152

DC = GC tan 20° = (1.16152)(.36397) = .42276

FC = DC sin 3°1'16" = (.42276)(.052707) = .02228

BF = BC(MIN) - FC = .913 - .02228 = .89072

BE = BF cos ∠FBE(MAX) = (.89072)(.999673) = .88954

$FD = \frac{DC}{\cos 3°1'16"} = \frac{.42276}{.999673} = .42332$

FE = BE tan 3°1'16" = (.88954)(.052777) = .04695

DE = FD + FE = .42332 + .04695 = .47027

.7195
.8895
2 | 1.6090
.9045 ± .015

1.
- .9045 ± .015
.2655 ± .018

(℄ REC + BOLT TO TOP REAR CORNER OF SAFETY IN LOCK POSITION.

.453
.470
2 | .923
.4615 ± .0085 - (DE) PIVOT HOLE TO POSSIBLE INTERFERING CORNER OF SAFETY

7.276 ± .003
- .4615 ± .0085
6.8145 ± .0115

6.8145 ± .0115 = 6.826 (MAX) / 6.803 (MIN) REC. FACE TO POSSIBLE PT. OF INTERFERENCE (DIM A)

6.8415 ± .0075 = 6.849 (MAX) / 6.834 (MIN) REC. FACE TO BOLT HEAD (DIM B)

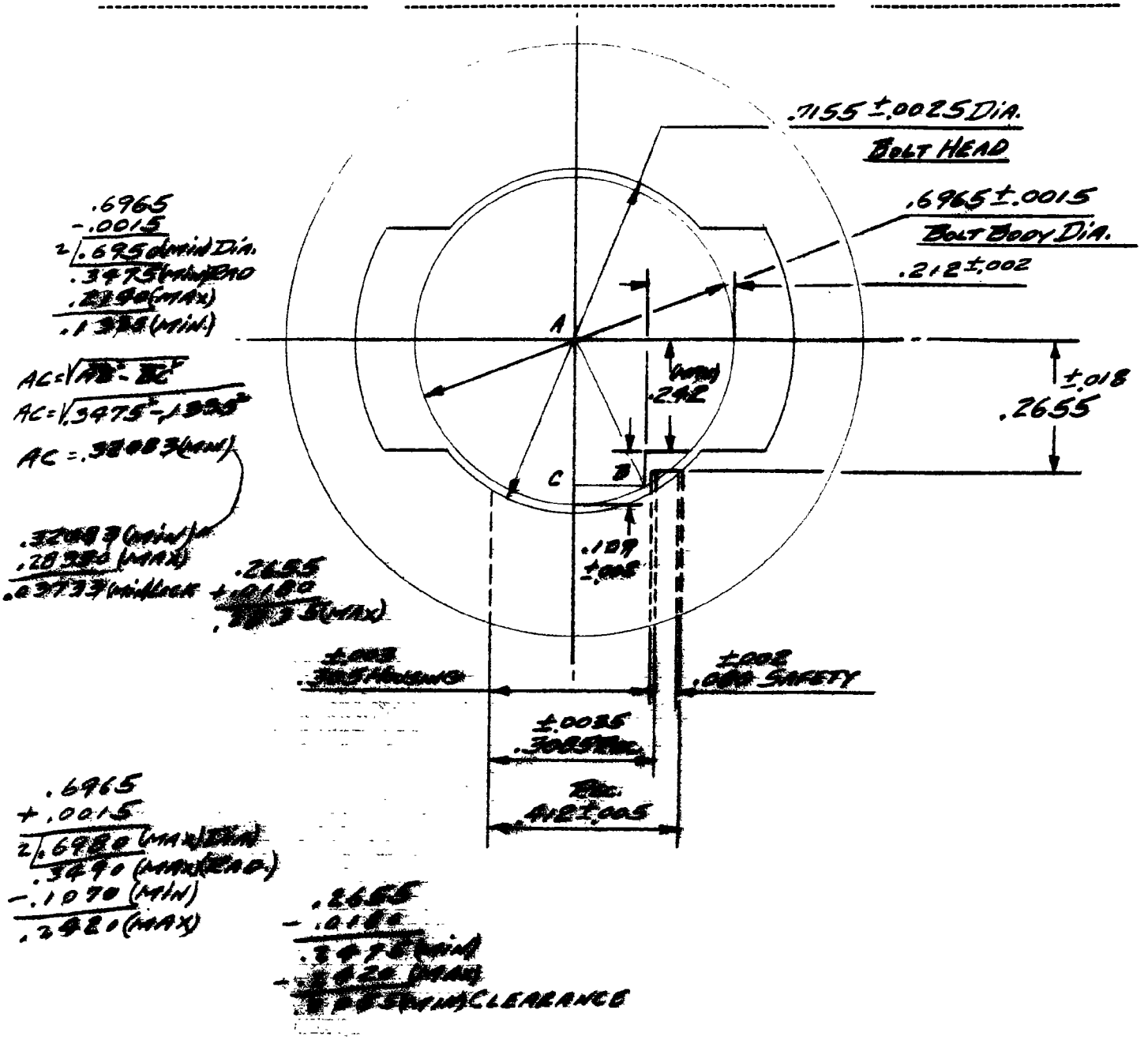
6.849 (MAX) - DIM B
6.803 (MIN) - DIM A
.046 (MAX) CLEARANCE

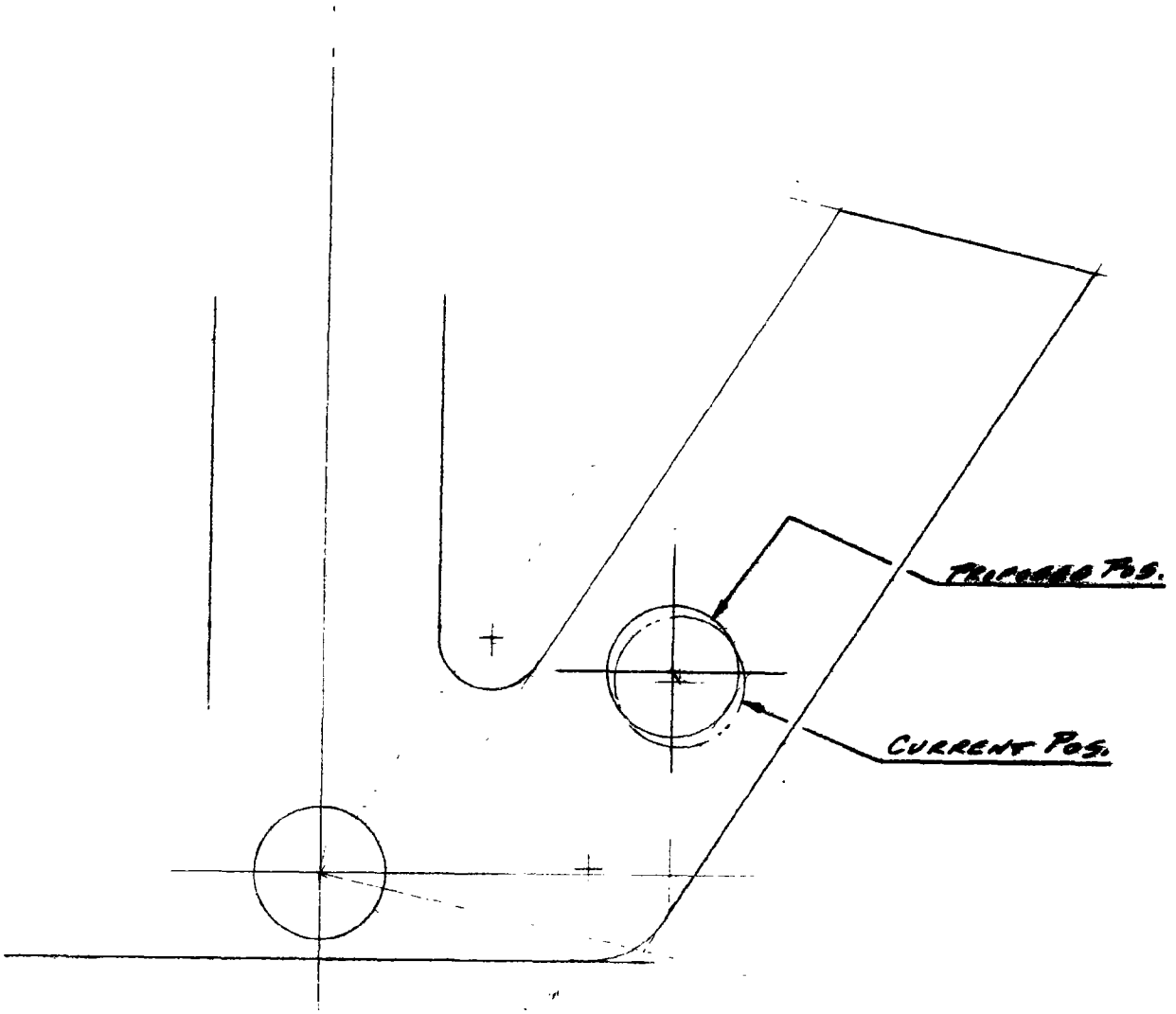
6.834 (MIN) - DIM B
6.826 (MAX) - DIM A
.008 (MIN) CLEARANCE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BY _____ DATE _____ SUBJECT M/72 REC., SAFETY + BOLT. PROPOSED SHEET NO. R OF _____

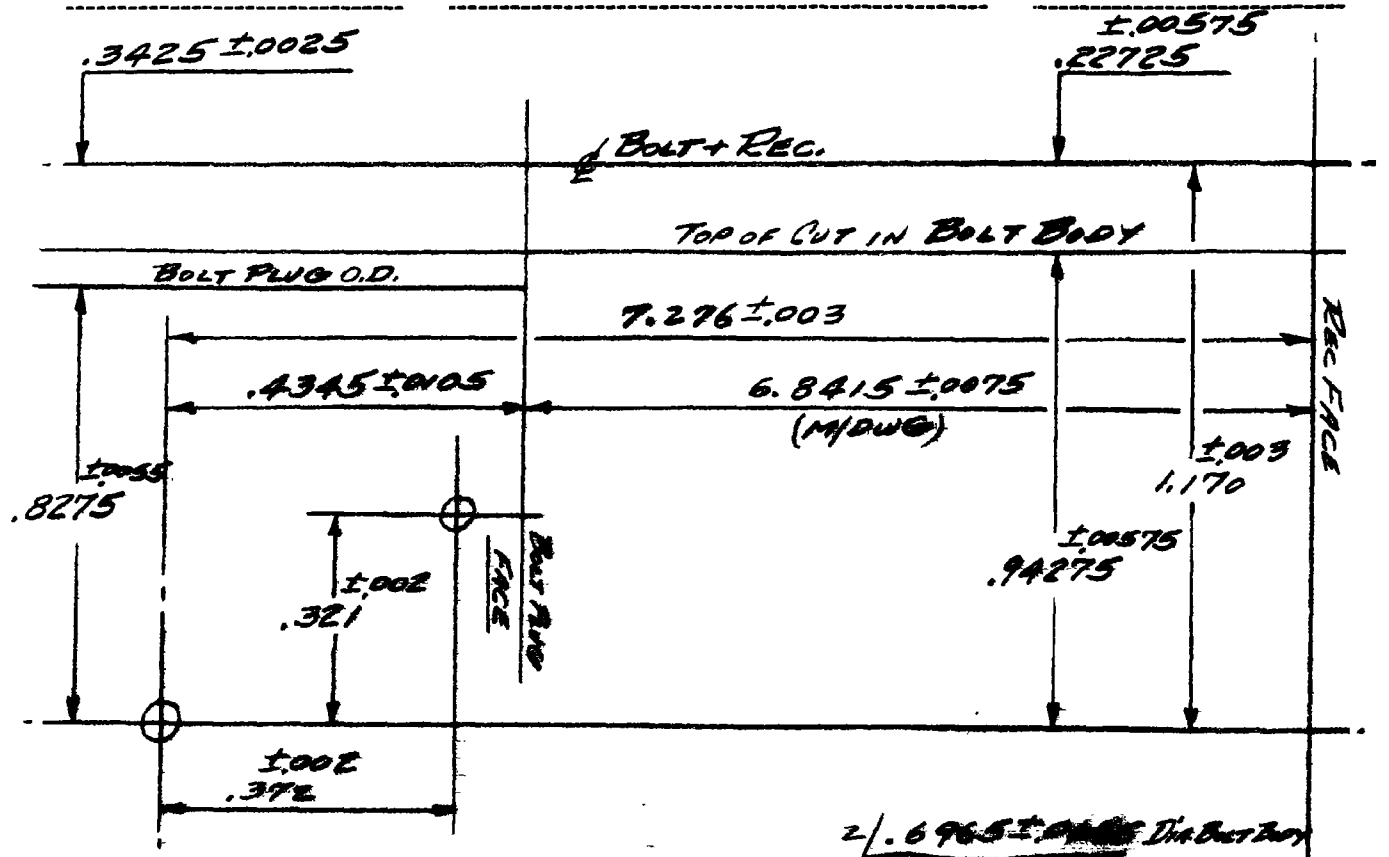
CHKD. BY _____ DATE _____ JOB NO. _____




PROPOSED POS.
CURRENT POS.

BY CSY DATE 7-7-67 SUBJECT M/711 REC, SAFETY + BOLT SHEET NO N OF

CHKD. BY DATE CURRENT JOB NO.



1.170 ±.003
.3425 ±.0025
.8275 ±.0055 BOLT PLUG O.D. TO ℄ PIVOT HOLE

2/.685 ±.005 DIA BOLT BODY
.34225 ±.0025

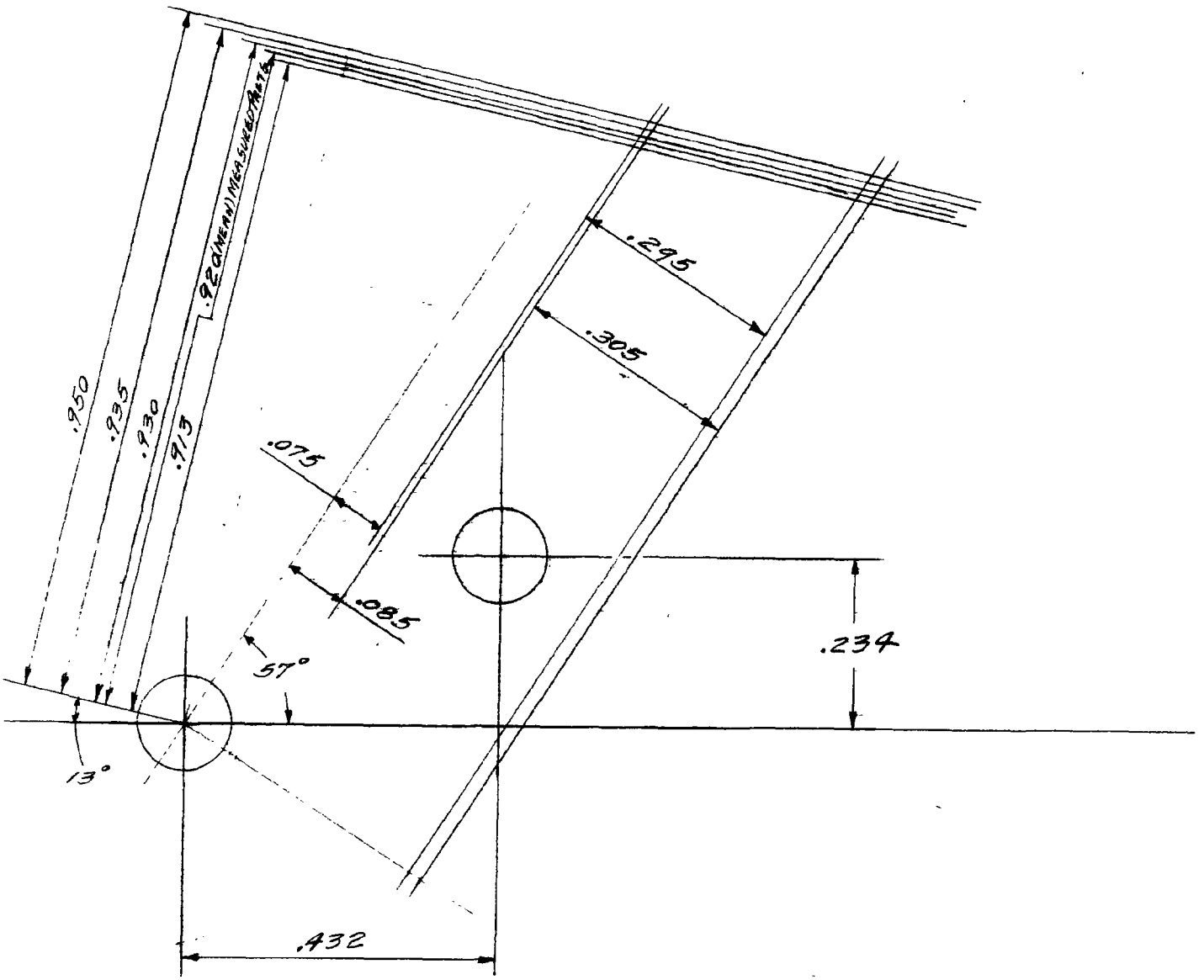
2/.6965 ±.005 DIA BOLT BODY
.34825 ±.00075
− .121 ±.002 SAFETY CUT IN BODY
.22725 ±.00275

7.276 ±.003 REC FACE TO PIVOT HOLE
− 6.8415 ±.0075 [illegible]
.4345 ±.0105 [illegible] OF BOLT HANDLE SLOT IN REC.

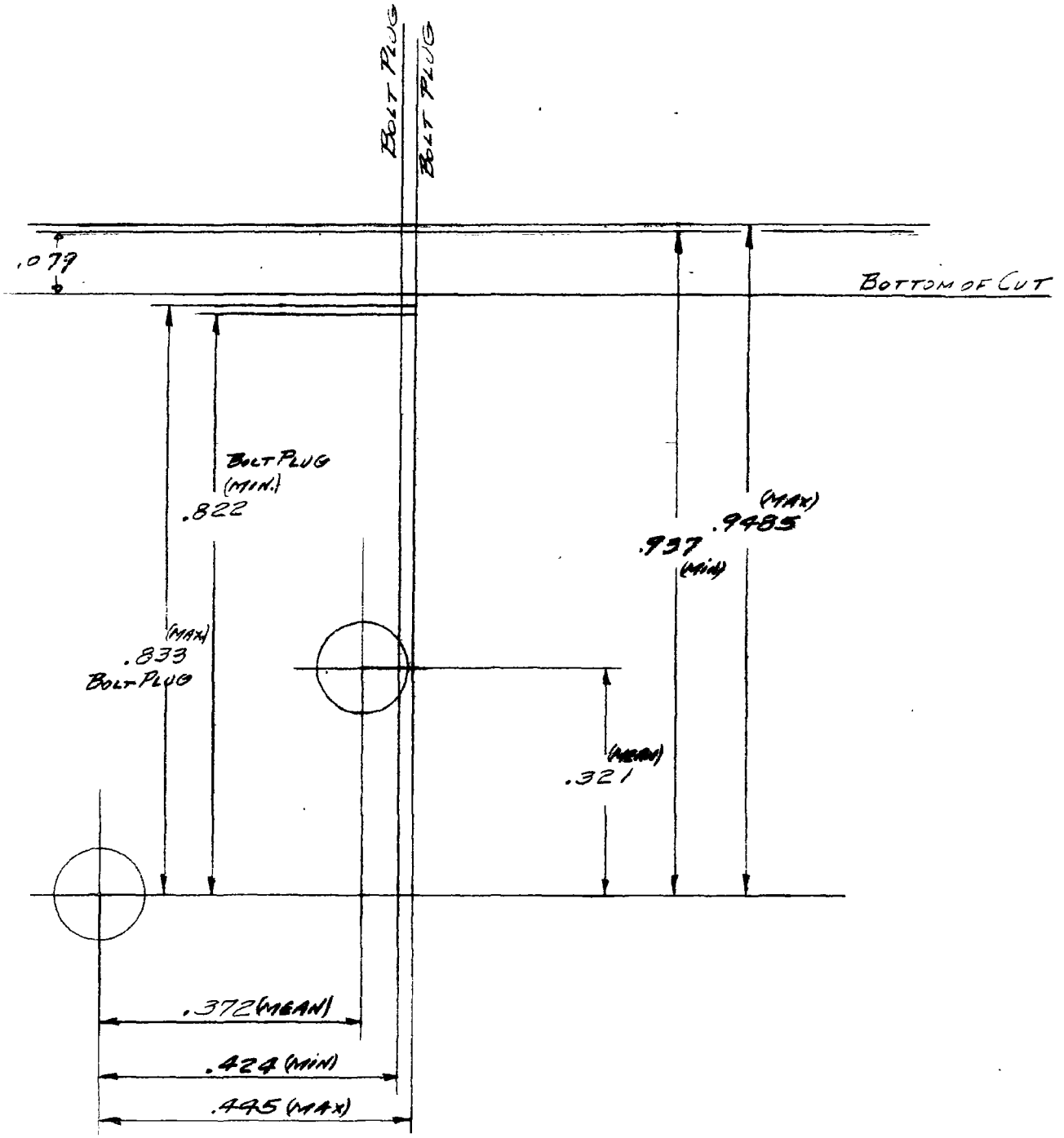
1.170 ±.003 ℄ BOLT TO PIVOT HOLE IN HOUSING
− .22725 ±.00275
.94275 ±.00575

BY CSY. DATE 6/27/61 SUBJECT M/72, REC, SAFETY + SHEET NO. 0 OF
CHKD. BY DATE BOLT. JOB NO.
CURRENT

BARBER - PRESALE R 0126488



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126488
R2527476


BOLT PLUG
BOLT PLUG
.079
BOTTOM OF CUT
BOLT PLUG
(MIN.)
.822
(MAX)
.833
BOLT PLUG
(MAX)
.9485
.937
(MIN)
(MEAN)
.321
.372 (MEAN)
.424 (MIN)
.445 (MAX)

TO: E. SAPP

FROM: GUN DESIGN SECTION

SUBJECT: TRANSMITTAL OF DRAWINGS

MODEL

Enclosed herewith copies of the following:

Name	Dwg. No.
Bolt Body - Rev.	
Housing - Rev.	

PARTS LISTS

REMARKS

Arms Research & Development
Guns Design Section

00627

RT-215

Date: 5/11/53

TO:

FROM:

GUN MODEL & NAME- 721, 722
DESIGN CHANGE REQUEST

PART NAME HOUSING
PART NUMBER C-17039

The following change in design is recommended:

REMOVE .106/.110 DIA. HOLE, 60° INC. CSINK .125/.135 DIA. AT SURFACE; AND REPLACE WITH .140/.144 DIA. HOLE.

Reason for Design Change:

TO IMPROVE OPERATION OF SAFETY

L. Lee Agent
22.3231

Remarks:

Design Change Made By: V.C.

Date: 5-11-53

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CC: R. A. Williamson, A. J. Brown, H. J. Hackman, E. B. Wallin, W. A. Best, A. D. Gordon, A. D. Kerr, J. W. Miller, C. Putney, C. I. Mann, W. Leek (2), R. E. Wright, M. B. Rogers, E. Sapp, M. Bennett, L. Pettingill, V. DeReus, L. Murphy, C. Prosser, R. Hurley, Tool Design, Central File, P. B. Croop

Completed

PRODUCT ENGINEERING & CONTROL
Remington Arms Company, Inc.
Ilion, New York

To: L. T. Murphy
Engineer
in Charge: C. Prosser

Date: 4-30-53
Model: 721-722
Part Name: Housing & Safety
Part No.: 17039 & 17040
Exp. No.: 223231

REQUEST FOR CHANGE

Title: Assembling Interference.

Object: To eliminate interference.

Summary: Recurring interference between the Safety, Safety Pivot Pin and Housing makes it necessary to take some action. The Safety Pivot Pin is dimensioned .124"-.125" diameter while the pin hole in the Housing is dimensioned .125"-.126" diameter which allows an interference.

A Before and After Heat Treat Audit shows a significant shrinkage of approximately .0005" through heat treat in the diameter of the holes.

Conclusion: Research and Development is requested to:
1. Change dim. .125"-.126" on Dwg. C-17039 to .1254"-.1264".
2. Add tabulation for .1262"-.1254" dia. hole - manufacturing dimensions .1267-.1259". Dimensions after heat treat .1262"-.1254".

Tool Design is requested to provide a new plug gage for diameter of Safety Pivot Pin hole in the Housing and the same hole in the Safety.

RSM 5/6

Engineer

Chief Process Engineer

RSM 5/6

Production

Chg. to Dept. 490

Research & Development

FGC 5-19-53 GHW

Methods & Standards

CP/I

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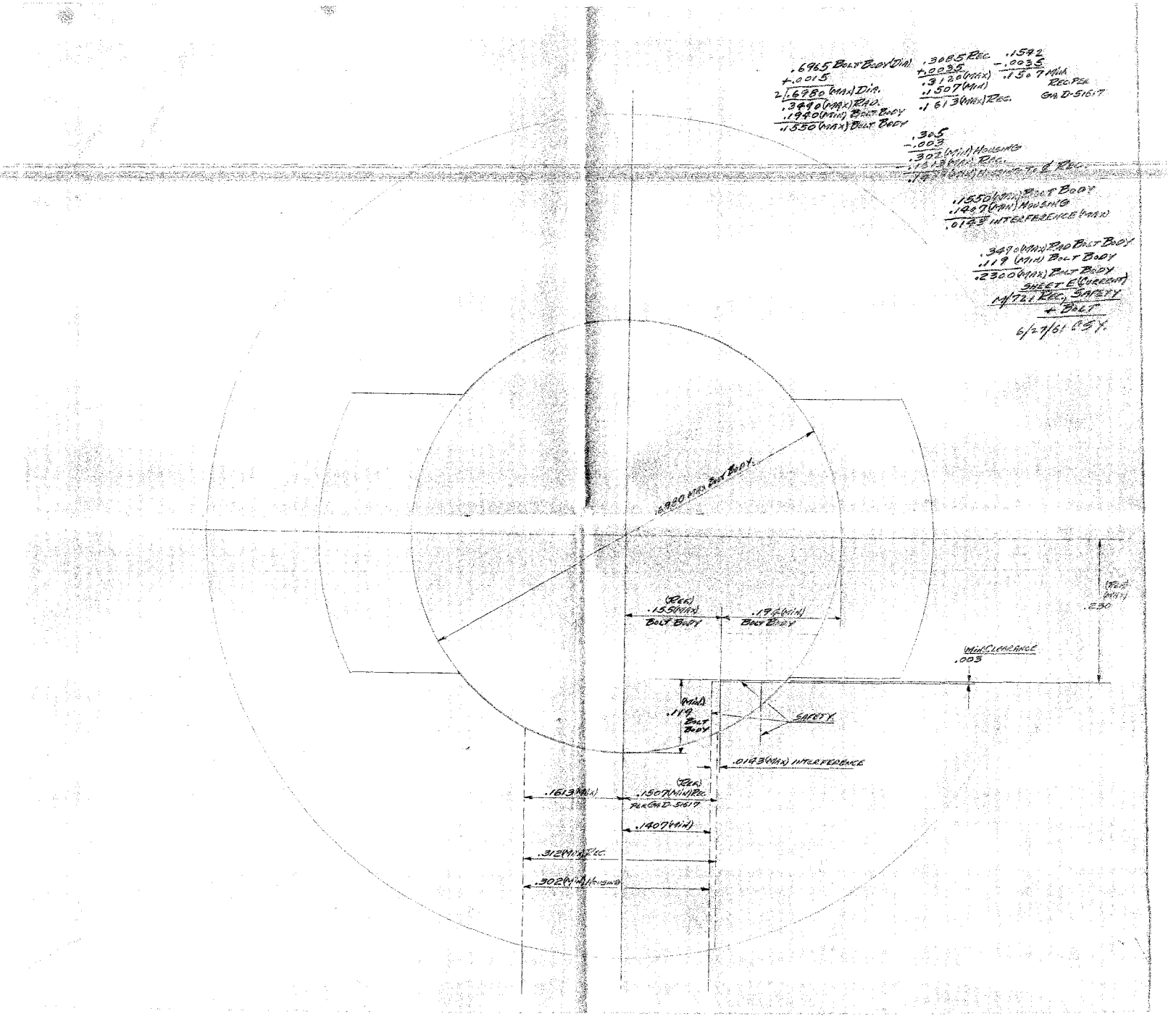
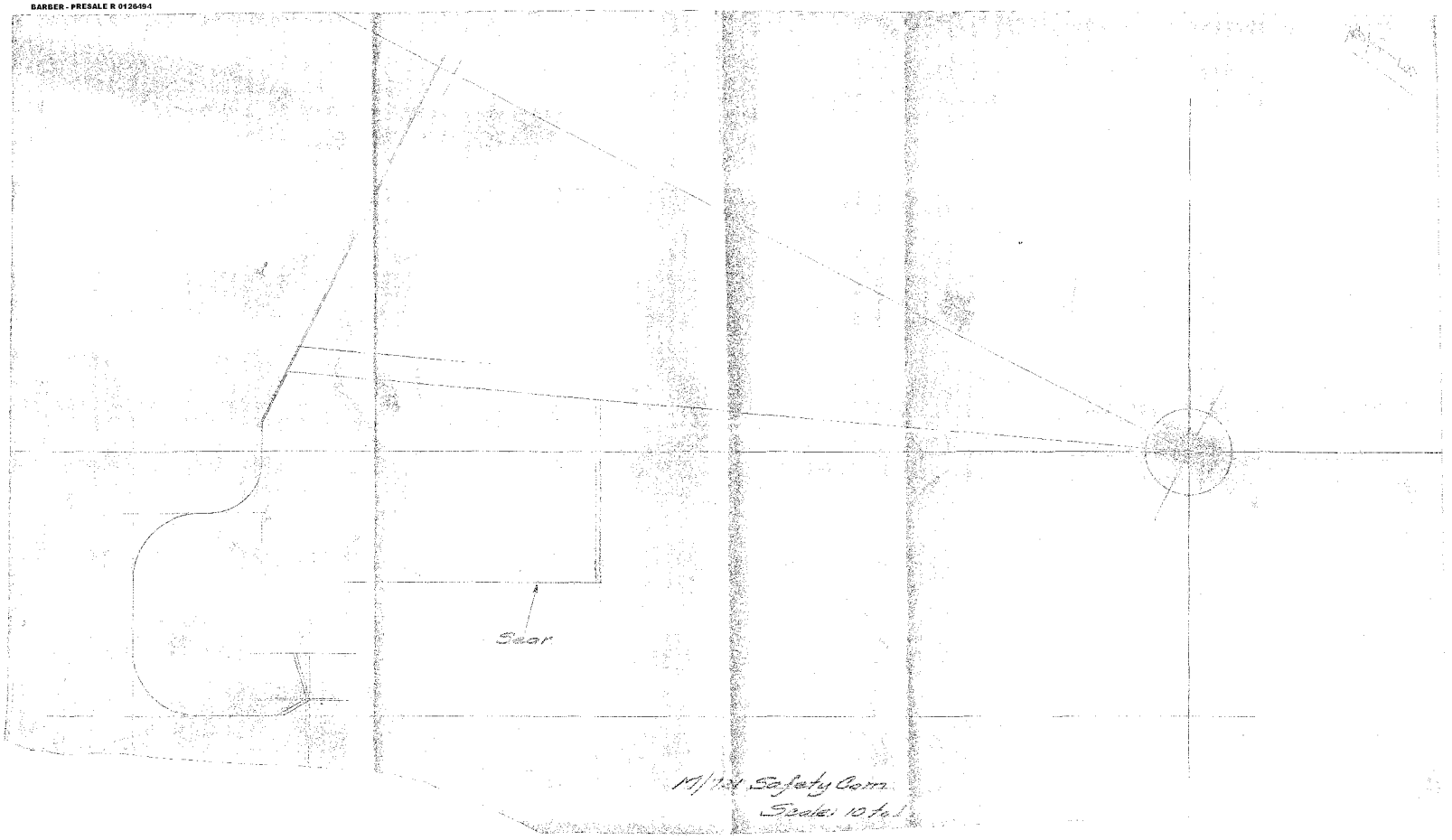
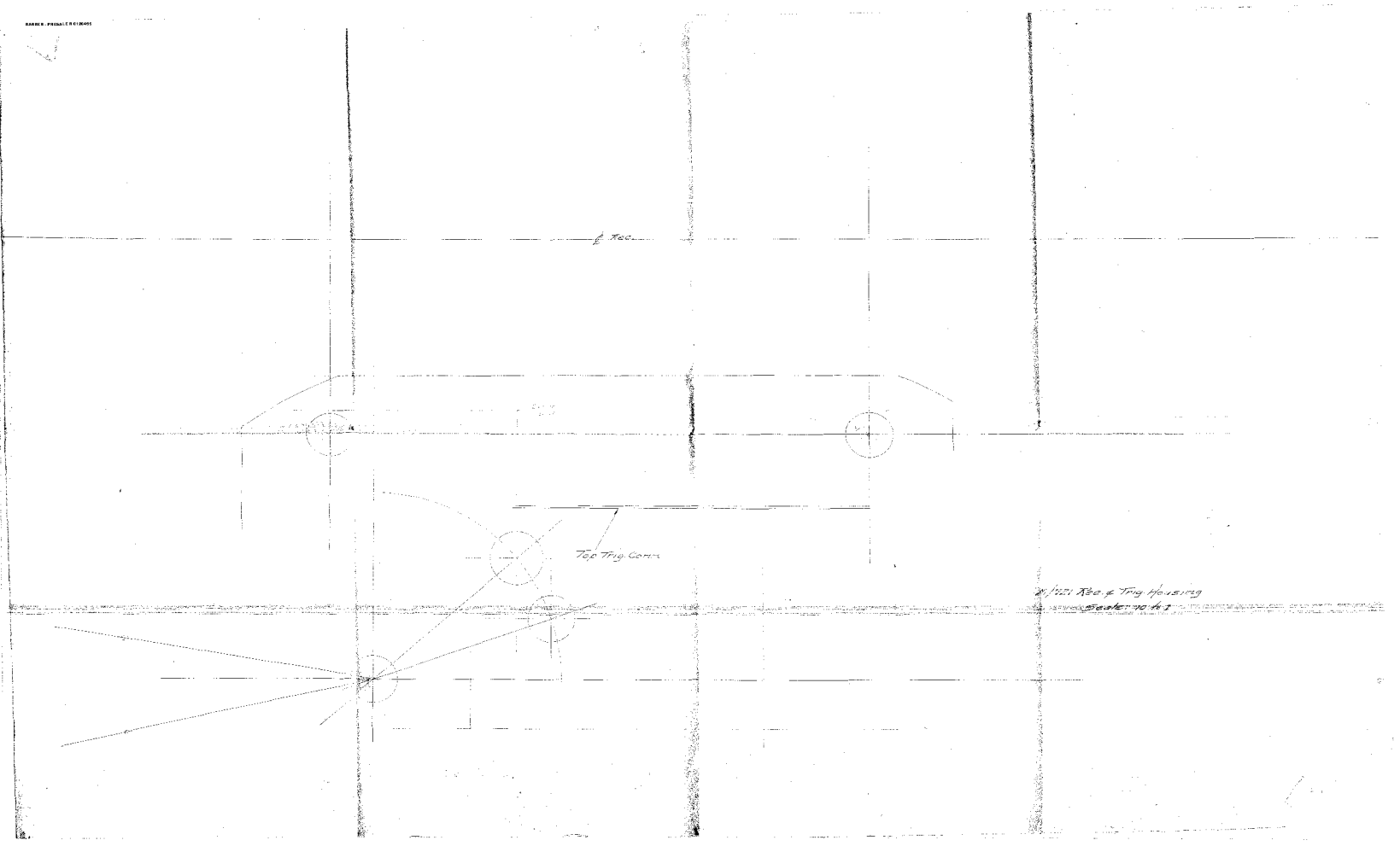
KINZER V. REMINGTON


.6965 BOLT BODY (DIA)
+.0015
2 .6980 (MAX) DIA.
.3490 (MAX) RAD.
.1940 (MIN) BOLT BODY
.1550 (MAX) BOLT BODY
.3085 REC.
+.0035
.3120 (MAX)
.1507 (MIN)
.1613 (MAX) REC.
.1542
-.0035
.1507 MIN.
REC PER GM D-5167
.305
-.003
.302 (MIN) HOUSING
.1613 (MIN) REC.
.1550 (MAX) BOLT BODY
.1497 (MIN) HOUSING
.0153 INTERFERENCE (MAX)
.3490 (MAX) RAD BOLT BODY
.119 (MIN) BOLT BODY
.2300 (MAX) BOLT BODY
SHEET E (CURRENT)
M/721 REC. SAFETY
+ BOLT
6/27/61 CSY.
.1980 (MAX) BOLT BODY
(REF)
.1550 (MAX)
BOLT BODY
.194 (MIN)
BOLT BODY
(REF)
.230
MIN CLEARANCE
.003
(MIN)
.119
BOLT
BODY
SAFETY
.0163 (MAX) INTERFERENCE
.1613 (MIN)
(REF)
.1507 (MIN) REC.
PER GM D-5167
.1407 (MIN)
.312 (MIN) REC.
.302 (MIN) HOUSING



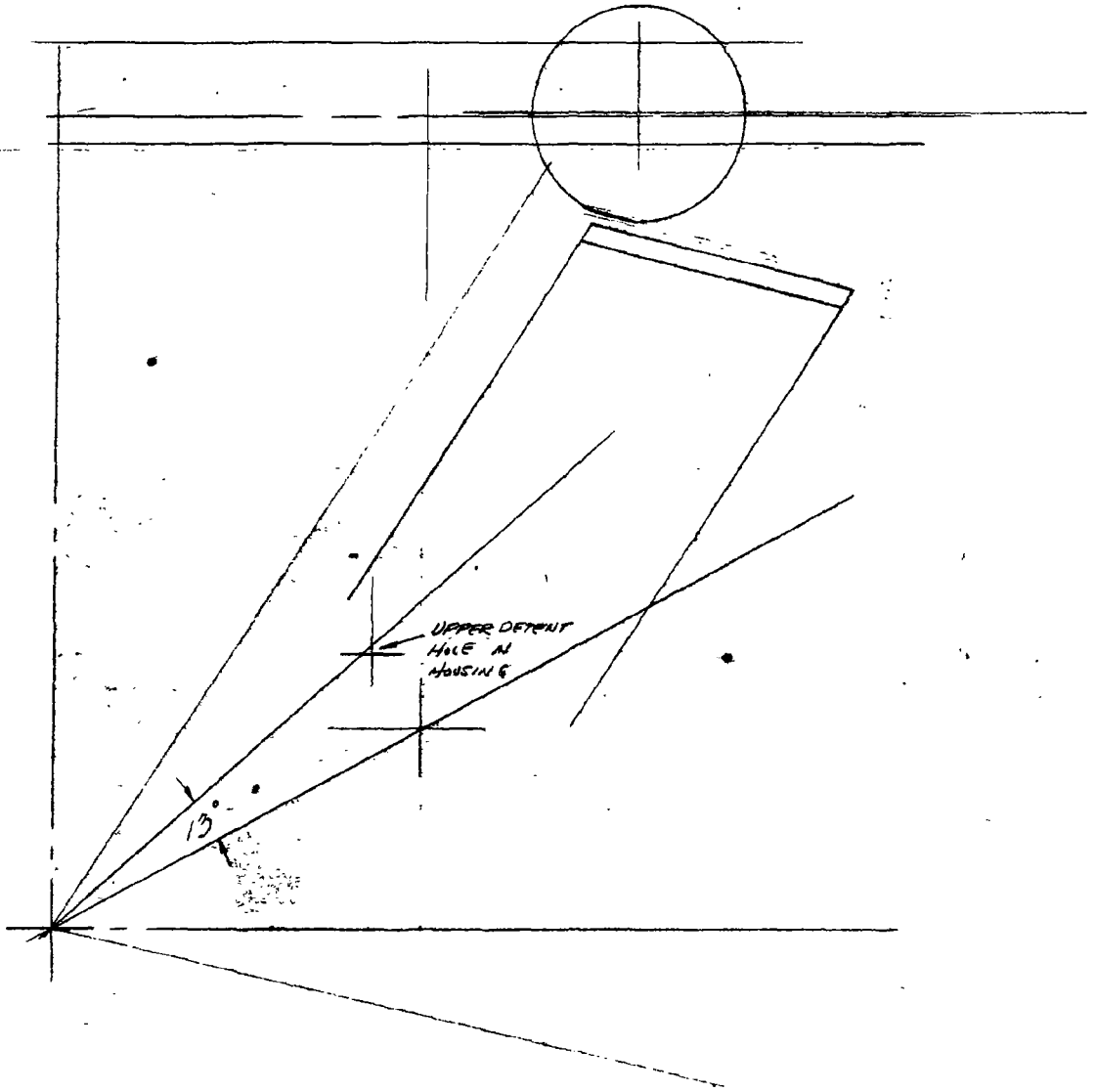
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

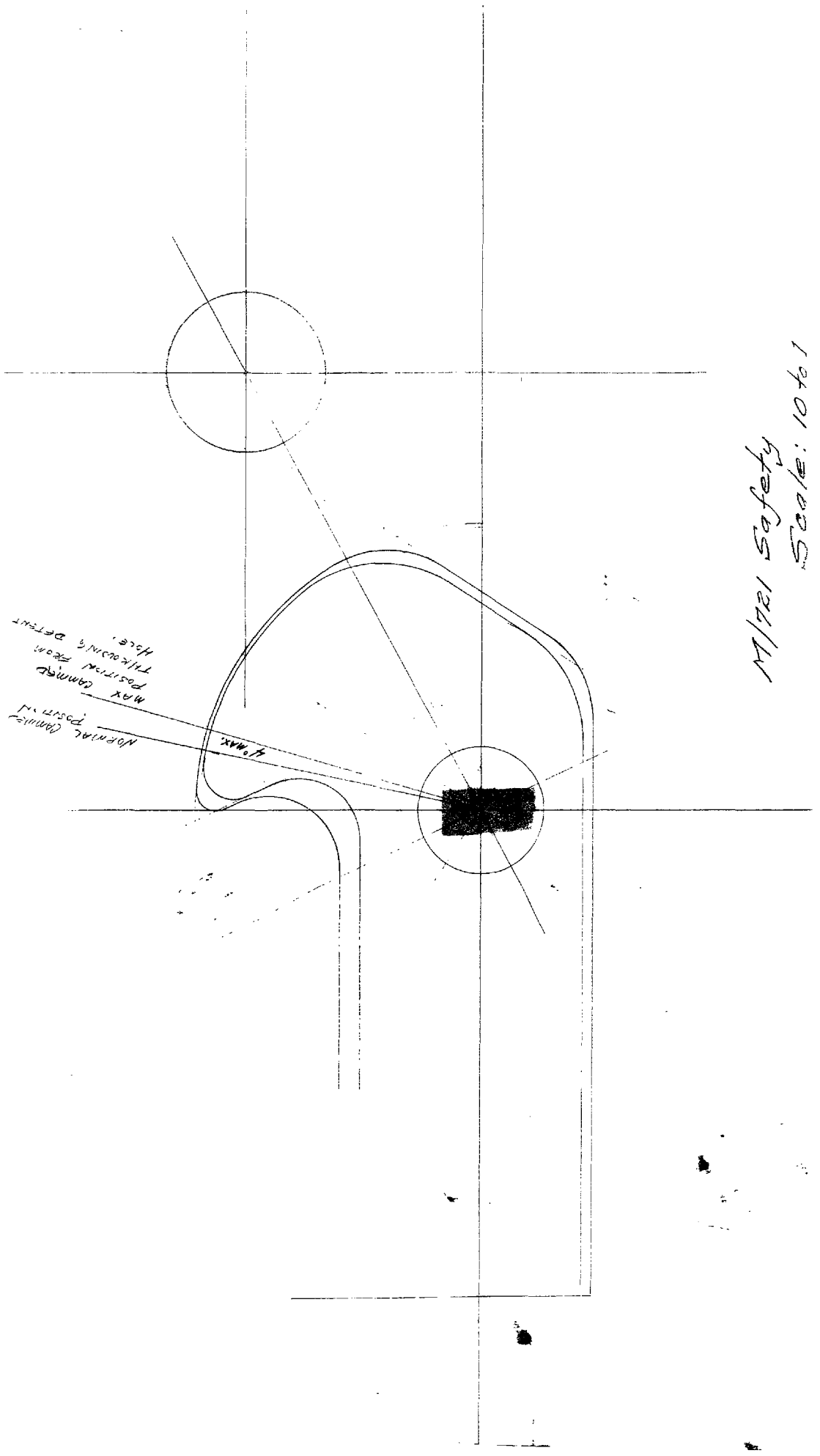
BARBER - PEGALE R 013055



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PEGALE R 013055


UPPER DETENT
HOLE IN
HOUSING
13°


M1911 Safety
Scale: 10 to 1
NORMAL CAMMED POSITION
MAX CAMMED POSITION FROM THUMBSING DETENT HOLE.
41° MAX.

CC: R. B. Hurley
A. D. Kerr) In
B. H. Gilbert) Turn
G. H. Markley

Ilion, New York
September 9, 1959

W. C. SCHRADER

MODEL 721 SAFETY - C-17040

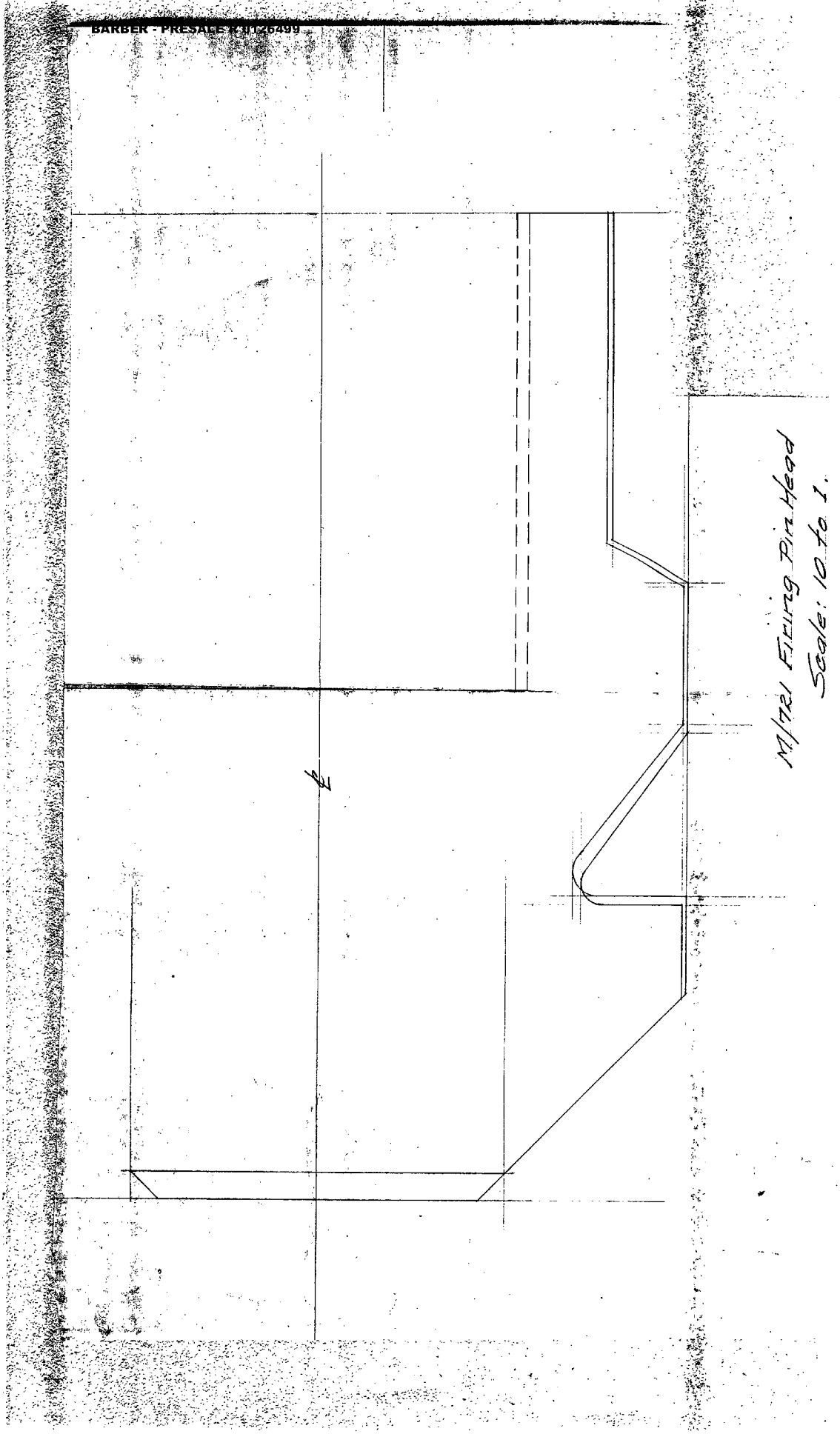
Please contact the vendor fabricating this part and instruct him to fabricate 5,000 piece order less "A" diameter (.1593"-.1573") hole and the final shave operation for .278"-.282"R.

Remington will drill "A" diameter hole on a temporary drill jig. P. E. & C. will request a model drawing change on this part as soon as possible.

P. B. Croop, Supervisor
Process Engineering Dept.
New Products & Tool Design

J. C. 9/9/59
Jack Carter
Process Engineer

JC/fc
Attach.


M/721 Firing Pin Head
Scale: 10 to 1.

BARBER - PRESALE R 0126500

P. E. & C. ESTIMATE

TO: H. J. Hartmann

ESTIMATED BY: P. Hudson YATES

MODEL 721-722 PROJECT NO. DATE 1/21/60

PROJECT TITLE Estimate to add the model 725 Safety mechanism to models 721-722

	HOURS	RATE	TOTAL
PROCESS ENGINEERING & TRIAL RUN			100
TOOL DESIGN FIXTURES - GAGES			400
TOOLING FIXTURES - GAGES			2000
TOOL DESIGN — PERISHABLE TOOLS			10
TOOL DESIGN REVISIONS			40
PERISHABLE TOOLING			50
TOOL REVISIONS			200
TOOL REVISIONS - PERISHABLE			0
TESTING			0
ADMINISTRATION			0
VENDOR TOOLING COSTS (DIES ETC.)			0
VENDOR TOOLING NOT REMINGTON PROPERTY			0
SUB TOTAL			2800
CONTINGENCIES			300
			3100

COMMENTS M+S to pick up other costs for safety mechanism, Receiver and Assembly from m/721-722 and 725 processes

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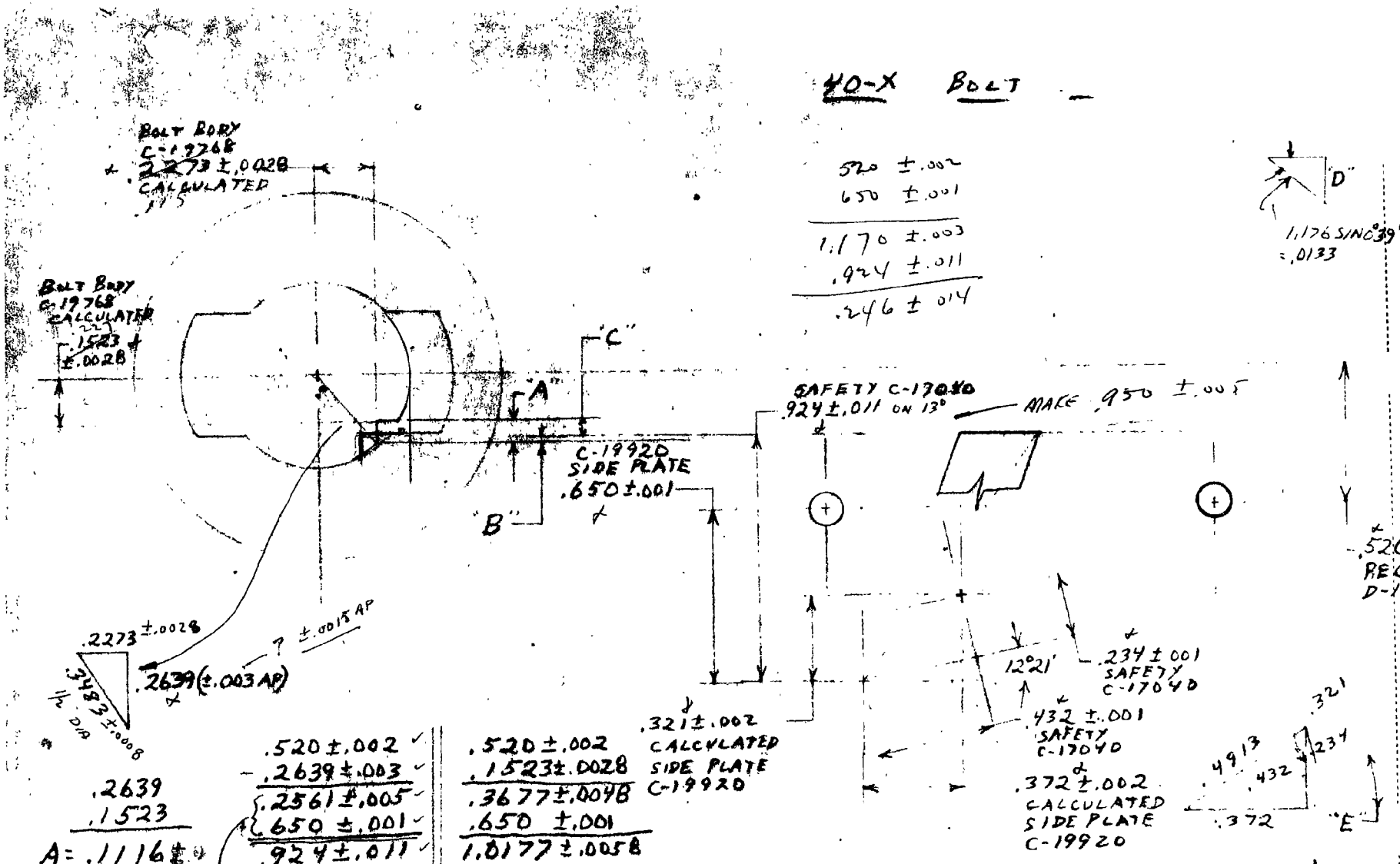
KINZER V. REMINGTON
BARBER - PRESALE R 012650
R2527489

BARBER PRELOAD LOCKING BOLT TEST
DATE
JOB NO.
SHEET NO.

40-X BOLT



.520 ±.002
.650 ±.001
1.170 ±.003
.924 ±.011
.246 ±.014

1.176 SIN 0°39' = .0133

.2639
.1523
A = .1116 ±

.520 ±.002
−.2639 ±.003
.2561 ±.005
.650 ±.001
.924 ±.011
.906 ±.006
B = .018 ±.017
OVERLAP

.520 ±.002
.1523 ±.0028
.3677 ±.0048
.650 ±.001
1.0177 ±.0058
.924 ±.011
C = .0937 ±.0168
CLEARANCE

.950 ±.005
.906 ±.006
.044 ±.011
min .033
−.008
.025 min coverage

$\tan^{-1} \frac{.234}{.432} = \tan^{-1} .54166 = 28°26\frac{1}{2}'$

$\tan^{-1} \frac{.321}{.372} = \tan^{-1} .86290 = 40°47\frac{1}{2}'$

"E" = DIFF. = 12°21'

∴ SAFETY LACKS 0°39' OF ROTATION TO 13° POSITION

D = LOSS OF ELEVATION = 1.176 SIN 0°39' SIN 38°51' = .0083

RD-5038

EQUIPMENT INSPECTION REPORT

SUBJECT M|721-722-40X Safety | TO DEPT. | NO.

INV'TY NO. | ORDER NO. 29— | DWG. NO. C-17080 | DATE 6-30-59

Chk

.235 - .233	Set to .234
.935 - .918 @ 13°	.908 @ high point
13° angle	14° - 30'
.433 - .431	.431

INSPECTOR Comstock | CORRECT | PASSED BY | DEL. TO

Copies to:

H. J. Hackman
R. B. Hurley
D. E. Miller

May 20th, 1960

TO: MR. S. M. ALVIS

SUBJECT: MODELS 721, 722 AND 40X SAFETY

During the assembly of the pilot models of the 40X Centerfire it was discovered that all rifles had safeties very difficult to operate. Investigation of this difficulty brought out several conditions which would effect the operation of the safety.

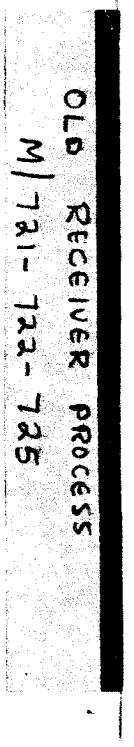
1) Large bolt holes in the receiver which allows an increased gap between the sear and the top of the trigger connector in an uncocked position and a consequent increase in the lift required to place the safety in the off position.

2) Misplaced fire control holes in the receiver in the downward direction which gives the same effect as above.

3) Warpage of the receiver tang which also effectively increases the required lift on the safety.

M. H. Walker, Supervisor
Industrial Design Section

MHW:ejs


OLD RECEIVER PROCESS
M1 721- 722- 725

SEQUENCE C OPERATIONS

OP. No.	OPERATION	DEPT.
3.	Step drill, deep hole drill, c'bore and face, tap, feed to stop, and cut off.	73
7.	Broach here to final [illegible]	54
8.	Burr face and broadside locating slot (M/40X only)	54
	NOTE: 40X becomes distinct at this point	
12.	Drill Bolt Lug recess cut. (M/40X only)	54
	Product check	54
15.	Broach to deburr (M/40X only)	54
16.	Broach Bolt Guide slots, and wash	54
20.	Turn O.D. (M/721 - 722 - 725) - 700 - 700 ADL)	54

OP. No.	OPERATION	DEPT.
22.	Stamp identification, turn O.D. (M/40X only)	54
24.	Centerless grind.	54
25.	Burr and break edge around both ends.	54
29.	Drill scope screw, Guard Screw and gas escape holes (M/721 - 722, 700 - 700 ADL.)	54
30.	Drill scope screw Guard Screw and Gas Escape holes (M/725 - 725 -222 only)	54
31.	Drill scope, Guard, and Ejector Screw holes (M/40X only)	54
32.	Plunge mill Ejection Port and Magazine slot. (M/721 - 722 - 725 - 700 - 700 ADL.) ADL	54
36.	Profile Ejection Port and Magazine slot. (M/721 - 722 - 725 - 700 - 700 ADL.) ADL	54

DATES AND REASONS FOR REVISIONS 9/15/61 - Entered from 8/18/ [illegible] Eng. reading on 180. - 296516- Burrs - [illegible] 6/62 - Eng. prods ident. - Maybe - 574985

DATES AND REASONS FOR REVISIONS

MODEL 721 - 722 - 40X - 725 - 700 - 700 ADL ADL

PART NAME

Receiver

PAGE 1 OF 5

GA. OR CAL.	721	722	722-222	40X	725 (Long)	725 (Short)
PART No.	20161	20162	19680	19767	23755	23756
			M/722 - 222 [illegible]			
M/700ADL	26575	26576	26577			
M/700 ADL	26578	26579	26580			

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KINZER V. REMINGTON
BARBER - PRESALE R 0126505
R2527493
BARBER - PRESALE R 0126505

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SEQUENCE C OPERATIONS

Payne

OP. No.	OPERATION	DEPT.
40.	Broach Ejection Port and Magazine slot (M/721-722 - 725 - 700 - 700 [illegible] ABL M/700 [illegible] 222 Cal. - [illegible] M/700 [illegible] ADL-222 [illegible] M/725 [illegible] 222 Cal. - [illegible] NOTE: - M/722 - [illegible] because [illegible]	54
44.	Finish mill Ejection Port, Inspect for Cut of Bolt Handle slot, and radius at rear. Burr right side, front and intersection of Ejection Port and Bolt opening.	54
46.	Bott mill Safety clearance slots (M/725 - 725 [illegible] only)	54
47.	Mill Fire Control slots.	54
48.	Shave primary cutting area.	54

OP. No.	OPERATION	DEPT.
60.	Buttmill, drill, and ream Fire Control holes.	54
64.	Finish mill tang, and burr tang.	54
84.	Mill Bolt Handle clearance, left side, and burr.	54
88.	Finish mill Bolt Handle slot.	54
90.	Mill Firing Pin Head clearance.	54
92.	Hand ream to burr bolt hole.	54
94.	Drill Bolt Stop Spring hole, [illegible] (40X, 721, 722, 725 only)	54
95.	Buttmill Bolt Stop Spring recess [illegible] (M/700 ADL - 700 [illegible] only)	54

DATES AND REASONS FOR REVISIONS 9/15/61 - Retyped from 8/18/61 Reading changed on 1BB - Payne - [illegible]
10/6/61 - Chg. reading - Payne - [illegible]
1/22/62 - Chg. grade blast. - Payne - [illegible]

DATES AND REASONS FOR REVISIONS

MODEL 721 - 722 - 40X - 725 PART NAME Receiver PAGE 2 OF 5

700 - 700 ADL ADL	GA. OR CAL.	721	722	722 - 222	40X	725 (Long)	725 (Short)
	PART No.	20181	20182	18680	19767	23755	23756
				M/725-222 16849			
	M/700 ADL	26575	26576	26577			
	M/700 [illegible]	26578	26579	26580			

BARBER - PRESALE R 0126506
BARBER - PRESALE R 0126506 R2527494

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SEQUENCE C OPERATIONS

OP. No.	OPERATION	DEPT.
104.	Punch end of Bolt Stop slot.	54
106.	Drill filler spring hole to depth (M/40X only)	54
107	Profile Fire Control Safety slot. (OMIT THIS OPERATION ON RECEIVERS TO BE TAKEN FOR M/511)	54
108	Buttmill front ramp. (M/721 - 722 - .222 - M/725-M/700-700 ABL.)	54
110.	Profile Magazine recess and turr. (M/721, 722, 722 - .222, 725 725 - .222 ABL - 700 ABL.	54
112.	Mill 30° bevel on bottom of rails. (M/721 - 722 - 725 - 700 - 700 ABL.)	54
113.	Profile 30° bevel on bottom of rails. (M/722 - .222, 725 - .222)(700 - .222, 700 ABL - .222)	54

OP. No.	OPERATION	DEPT.
114.	Mill Safety clearance slot (M/725 - only) 725-222	54
116.	Centerless grind.	54
118.	Mill Safety clearance (M/700 - 700 ABL - 700 ABL only)	54
120.	Mill top radius for scope mount.	54
124.	Tap 3 Guard Screw holes (M/721, 722, 40X - 700 - 700 ABL) ABL	54
126.	Tap 2 Guard Screw holes (M/725 only)	54
128.	Buttmill Shell clearance M/721 - #20181 & M/722 - #20182 M/725 - #23755 & #23756 ABL M/700 #26575 & #26576 M/700 ABL - #26578 & #26579 (Omit on all .222 Cal.)	54
132.	Tap 6 scope holes.	54

DATES AND REASONS FOR REVISIONS 9/15/61 - Retyped from 9/14/61
Added reading to 128 - Payne - 256580
10/17/61 - Chg. oper 135 to 118 - Payne - 256686
1/22/62 - Chg. grade 16cnt. Payne - 256985

DATES AND REASONS FOR REVISIONS
1/22/62 - Chg. grade 16cnt. - Payne - 26985

MODEL 721 - 722 - 40X - 725

PAGE 3 OF 5

PART NAME	GA. OR CAL.	Receiver					
	PART No.	721	722	722-222	40X	725(Long)	725 (Short)
		20181	20182	18680	19767	23755	23756
				725-222			
				16849			
M/700 ABL		26575	26576	26577			
M/700 ADL		26578	26579	26580			

BARBER - PRESALE R 0126507
BARBER - PRESALE R 0126507 R2527495

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126508

SEQUENCE C. OPERATIONS

OP. No.	OPERATION	DEPT.
139.	Stamp S&F (M/725 only)	54
139-1	Finish c'bore Barrel hole to depth (M/40X only)	54
140.	Broach Bolt hole and Guide slots for burr.	54
148.	File burrs at bolt stop recess, rear of Trigger slot, and Fire Control slot. Inspect for visual defects and fit bolt. (File 1/8 radius on rear of tang. (M/700 ADL, 700 BDL only) Hand ream Fire Control hole (to remove burrs) and draw file and polish 30° bevel on bottom of rails.) (Except on 40X) Product check for missed operations after Operation 148.	54
156.	Roll mark "Remington" and model number.	54

OP. No.	OPERATION	DEPT.
160.	Roll mark "22 Long Rifle" (M/40X only)	54
164.	Stamp serial no., left side front.	54
168.	Austemper - M/721, 722, 725, 700ADL,700 BDL	51
172.	Lindberg Draw - M/721, 722, 725, 700, 700 ADL, 700 BDL	51
174	Neutral Salt Harden (M/40X only)	51
176.	Lindberg Draw (M/40X only)	51
178.	Inspect Rockwell Hardness (M/40X only)	51
179.	String draw Front end (M/40X only)	51
179-2	Cyanide Deplate to remove stains. (M/40X only)	51

DATES AND REASONS FOR REVISIONS 1/10/62 - chg. reading on op. 148 - Payne - 256945 - Retyped from 10/17/61
1/22/62 - Chg. grade ident. - Payne - 256985

DATES AND REASONS FOR REVISIONS

MODEL 721 - 722 - 40X - 725 - 700 - 700 ADL

PART NAME Receiver

PAGE 4 OF 5

GA. OR CAL.	721	722	722 - 222	40X	725(Long)	725(Short)
PART No.	20181	20182	18680	19767	23755	23756
			725 -222 16849			
M/700 ADL M/700 BDL	26575 26578	26576 26579	26577 26580			

R527496

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SEQUENCE OF OPERATIONS

OP. NO	OPERATION	DEPT.
182.	Grind front face square, and sort with master bolt and plug gage to segregate receivers requiring fitting, polishing, or draw filing.	54
183R.	File to fit Bolt and plug gage.	54
184R	Polish bolt hole to remove visual defects.	54
185R	Draw file rails to remove visual defects.	54
188.	Finish polish and chamfer.	54
188-1	Vibrator finish	70
188-2	Remove lodged chips.	70
~~189.~~	~~Coarse Blast Exterior (M/725, 725-222 only)~~	~~54~~
~~193.~~	~~Fine blast exterior (M/725, 725-.222 only)~~	~~54~~

OP. No.	OPERATION	DEPT.
194.	Grit blast (M/700 BDL only)	54
	NOTE: Oil spray - Steel Guard - #1301	
195.	Hand tap Barrel hole.	58
	To Barrel and Receiver Assembly - Dept.	58

DP200

DATES AND REASONS FOR REVISIONS 1/10/62 - Retyped from 10/25/61

1/22/62 - Chg. grade ident. - Payne - 25698

DATES AND REASONS FOR REVISIONS

MODEL ~~721 - 722 - 40X - 725~~ PART NAME Receiver PAGE 5 OF 5

700 - 700 ADL BDL

	GA. OR CAL.	~~721~~	~~722~~	~~722 - 222~~	40X	~~725 (Long)~~	~~725 (Short)~~
	PART No.	~~20181~~	~~20182~~	~~18680~~	19767	~~23755~~	~~23756~~
				~~M/725-222~~			
				~~16849~~			
	M/700 ADL	26575	26576	26577			
	M/700 BDL	26578	26579	26580			

RD-6460

BARBER - PRESALE R 0126509
BARBER - PRESALE R 0126509 R2527497

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126510

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 4/18/55 - Revised - ECC - 249847
1/23/58 - Add 725 - Hunt - 252773 - 12/10/59 - .020 was .008 T.I.R. - Hunt - 254423
3/31/58 - Was operation 4A - Hunt - 252925 8/18/61 - Add 700 - 700 ADL - Payne - 256441
4/29/58 - Added 725 - .222 - ZK - 253021 1/22/62 - Chg. grade ident. - Payne - 256985
8/31/59 - Added TS-3375,83138,83191-Hunt - 254234

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES 721	722	722 - .222	725(Long)	725 (Short)	40X
SPEED	FEED					725-.222			
STEP DRILL BARREL & BOLT HOLE									
178	.011	Drill		A-69549	A-69549	A-69549	A-69549	A-69549	A-69549
		1 7/16 spindle collet		B-90047W	B-90047W	B-90047W	B-90047W	B-90047W	B-90047W
		1 7/16 spindle collet bushing		B-90048W	B-90048W	B-90048W	B-90048W	B-90048W	B-90048W
		Flanged tool holder		B-90045V	B-90045V	B-90045V	B-90045V	B-90045V	B-90045V
		Adapter		B-90112N	B-90112N	B-90112N	B-90112N	B-90112N	B-90112N
		Doubling Margin Drill		A-TS-3375					
DRILL BOLT HOLE TO FULL DEPTH									
178	.033	.683 oil hole drill		A-54222	A-54222	A-54222	A-54222	A-54222	A-54222
		collet		B-54363	B-54363	B-54363	B-54363	B-54363	B-54363
		Plug gage (.687-.680		B-80007V	B-80007V	B-80007V	B-80007V	B-80007V	B-80007V
(Set-up only)		Runout Gage .001 T.I.R.		C-83138	C-83138	C-83138	C-83138	C-83138	C-83138
		NOTE: M/721 9" deep		M/725 (Long)					
		M/722 - 8 1/8" deep		M/725 (Short)					
(Set-up only)		Long Plug [redacted]		B-83191	B-83191	B-83191	B-83191	B-83191	B-83191
		NOTE: Engage feed before drill enters small hole.							
OPERATION DESCRIPTION			PART No.	20181	20182	20680 16849	23755	23756	19767
Step drill; deep hole drill; c'bore and face; tap; and cut off.									
			M/700 [redacted]	26575	700-26576	700-26577			
			M/700 [redacted]	26578	700[redacted]-26579	700[redacted]-26580			
[redacted]			OCC. No.	39	39	39			
			STD. HRS/C	10.225	9.791	9.791			
			STD. No.	[redacted]-66	[redacted]-67	[redacted]-67			
			EFF. DATE	10/20/47	10/20/47	10/20/47			

ADL 700-700 ADL -

PART NAME Receiver COOLANT Macco SET UP TIME MODEL No. 721-722 -725-40X OPER. No. 3
TYPE J&L Turret MACH. HRS. DEPT. No. 73 PAGE 1 OF 3

RD-6461

BARBER - PRESALE R 0126510 R2527498

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126511 R2527499

BARBER - PRESALE R 0126511

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 4/18/55 - Revised process - ECC - 249847 4/14/61 - Chg. c'bore - ECR - 256031
1/23/58 - Add 725 - Hunt - 252773 - 8/18/61 - Add 700 - 700 ADL - Payne - 256441
3/31/58 - Was operation 4A - Hunt - Chg. equipment reading - 252925 1/22/62 - Chg. grade ident. - MP-256985
4/22/58 - Added 725 - .222 - ZK - 253021
8/31/59 - Add 52104-1 and TS-3394 - Hunt - 254234

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 721	722	722-.222 / 725-.222	725 (Long)	725 (Short)	40X
		C'BORE AND FACE BARREL HOLE							
1041	.007	Carbide c'bore *	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	B-84245
		Depth Ga. (1.151-1.149)		B-50240	B-50240	B-50240	B-50240	B-50240	B-50240
		Setting Gage		B-50295	B-50295	B-50295	B-50295	B-50295	B-50295
		Fed. Dial (1.003-.998 dia.)		B-80057W	B-80057W	B-80057W	B-80057W	B-80057W	B-80057W
		Setting Gage		B-80064W	B-80064W	B-80064W	B-80064W	B-80064W	B-80064W
		C'sink gage		B-74639	B-74639	B-74639	B-74639	[illegible]	B-74639
		[illegible] (Ziegler) or Floating Holder (Glencoe)		Std.	Std.	Std.	Std.	Std.	Std.
		NOTE: Maintain tension on star wheel and relieve c'bore as soon as feed stops.							
		* Temporarily use B-74697 with reamer section reduced for use as a .680 dia. pilot.							
		Weddell Combination Tool		C-TS-3394					

OPERATION DESCRIPTION	PART No.						
	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						

PART NAME Receiver COOLANT SET UP TIME MODEL No. ADL 700 - 700 ADL 721-722 -725-40X OPER. No. [illegible] 3
TYPE MACH. HRS. DEPT. No. 73 PAGE 2 OF 3

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126512 R527500

PROCE RECORD

DATES AND REASONS FOR REVISIONS 9/18/61 - Retyped from 8/18/61
1/22/62 - Chg. grade ident. - Payne - 256985

TOOLS, GAGES AND EQUIPMENT	SPEED	FEED	GA. OR CAL.	APPROVAL AND DATES 721	722	722-222	725(Long	725 (Short)	40X
TAP BARREL HOLE									
40 Hand									
Reborn Tap (1 1/16 NC-3)				B-74685	B-74685	B-74685	B-74685	B-74685	B-74685
90 Hand			Flanged tool holder	B-90045W	B-90045W	B-90045W	B-90045W	B-90045W	B-90045W
			Releasing tap holder	B-90041V	B-90041V	B-90041V	B-90041V	B-90041V	B-90041V
			Thread Gage	B-80071U	B-70071U	B-80071U	B-80071U	B-80071U	B-80071U
			Thread segments	B-80072W	B-80072W	B-80072W	B-80072W	B-80072W	B-80072W
			Min. Setting Ring (.003 T.I.R.)	B-80078W	B-80078W	B-80078W	B-80078W	B-80078W	B-80078W
			Thread depth gage	A-52823	A-52823	A-52823	A-52823	A-52823	A-52823
			Thread Plug (Salvage Max.)	A-54568	A-54568	A-54568	A-54568	A-54568	A-54568
FEED TO STOP AND CUT OFF									
			PDQ Insert						
734	.005		Carbide cut-off Insert	A-83279	A-83279	A-83279	A-83279	A-83279	A-83279
			Stock Stop	B-90010V	B-90010V	B-90010V	B-90010V	B-90010V	B-90010V
			Snap Gage (Lgth) (M/721 - 8.715 - 8.695) M/725- (Long) (M/722 - 7.865 - 7.845) M/725 (Short)	B-80020W	B-80020P	B-80020P	B-80020W	B-80020P	B-80020P
			Base Gage	D-51341	D-51341	D-51341	D-51341	D-51341	D-51341
			Deburr end of Bolt hole 100%						
			Model - 700 ADL	26575	26576	26577			
			700 BDL	26578	26579	26580			
C'SINK BARREL HOLE (TO BE DONE AFTER DRILL STATION UNTIL ABOVE WORK IS COMPLETED ON C'BORE.									
			Severence c'sink (1½" dia.)	Std.	Std.	Std.	Std.	Std.	Std.
			C'sink gage (Set-up only)	B-74639	B-74639	B-74639	B-74639	B-74639	B-74639
			Base Ga.	D-71554	D-71554	D-71554	D-71554	D-71554	D-71554
			Max. hole runout	.010 T.I.R.	.010 T.I.R.	.010 T.I.R	.010 T.I.R	.010 T.I.R.	.010 T.I.R
			Vise Jaws - Used on Bypass Mill to length operation on substitute Stock				C-82762		

ADL
700-700BDL-721-722-725 -40X

PART NAME Receiver COOLANT Macco SET UP TIME MODEL No. OPER. No. 3

TYPE MACH. HRS. DEPT. No. 73 PAGE 3 OF 3

MACHINE

RD-6463

BARBER - PRESALE R 0126512

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126513
R2527501

BARBER - PRESALE R 0126513

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 9/18/61 - Retyped from 8/18/61
9/20/61 - Chg. concentricity # - correction
1/22/62 - Chg. grade identification - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES					
SPEED / FEED		721	722	722-.222 725-.222	725 (Long)	725 (Short)	40X
#3 Cut #4 Return	H.S.S. TWO STEP BROACH	D-53963	D-53963	D-63963	D-53963	D-53963	D-53963
*	Fixture	D-83935	D-83935	D-83935	D-83935	D-83935	D-83935
	Retriever	D-67025	D-67025	D-67025	D-67025	D-67025	D-67025
	Broach Holders	B-52322	B-52322	B-52322	B-52322	B-52322	B-52322
	Reducting Bushing	C-50196	C-50196	C-50196	C-50196	C-50196	C-50196
	Pull Pin	A-54548	A-54548	A-54548	A-54548	A-54548	A-54548
	Plug Gage	B-84441	B-84441	B-84441	B-84441	B-84441	B-84441
	Plug Gage (.703-.700)	B-80199V	B-80199V	B-80199V	B-80199V	B-80199V	B-80199V
	Concentricity Gage (.003 ind. reading)	D-82739	D-82739	D-82739	D-82739	D-82739	D-82739
	NOTE: Permissable to accept at .7035 dia. when broaches are new.						
	* Place front end of Receiver against face plate						
	Base Ga. **	D-71554	D-71554	D-71554	D-71554	D-71554	D-71554
	** Max.allowable hole runout .015 T.I.R.						

OPERATION DESCRIPTION	PART NO.						
		20181	20182	18680	23755	23756	19767
	AEL						
Broach bore to final I.D.	Model 700	26575	26576	26577			
	700 ADL	26578	26579	26580			

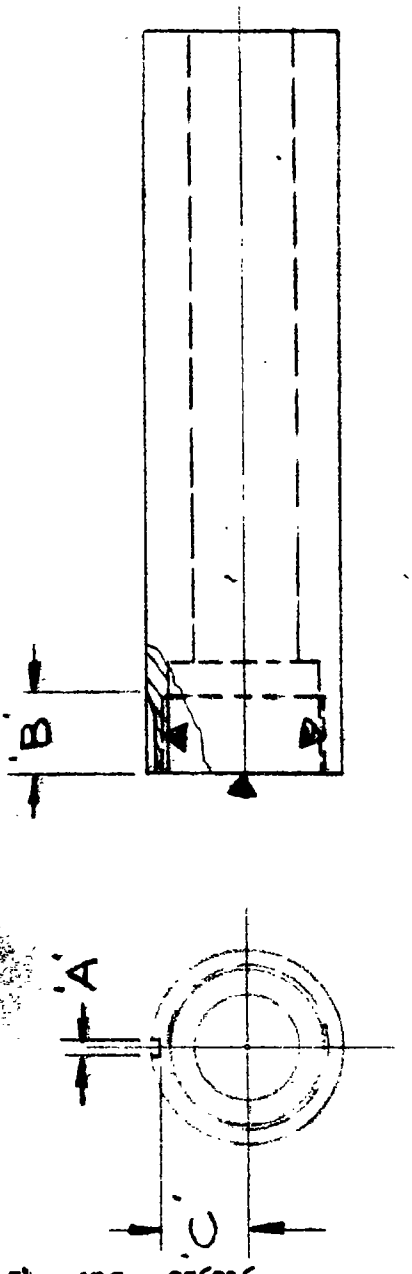
PART NAME Receiver COOLANT Sun. #623 SET UP TIME AEL MODEL No 700-700 ADL-721-722-725-40X OPER No 7
TYPE MACHINE LaPointe Hydraulic Broach H.P.-30 DEPT No 54 PAGE 1 OF 1

RD 8461

TPR-7

PART: RECEIVER M140-X	PART No. 19767
OPERATION: H/MILL LOCATING SLOT	OPER. No.: 8 DEPT - [redacted] 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. 58 to 54 - MS - 256316
1/[redacted]/61 - Chg. dept. # - ECR - 255776
3/14/55 - Revised process - K - 249742

COMPILED BY:	APPROVAL & DATE:
K-12-22-54	K

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126515 R2527503

BARBER - PRESALE R 0126515

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

3/14/55 - Revised process - K - 249742 -
5/9/55 - Chg. "B" - "C" Dim. and dept. no. ZK - 249971
1/[illegible]/61 - Chg. dept. & mach. - ECR - 255776
7/5/61 - Chg. dept. 58 to 54 - M&S - 256316
12/21/61 - Replace temp. ga. - Payne - 256902

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	M/40X	APPROVAL AND DATES				
		Cutter - 3 x 1/8 x 1" hole		Std.					
		Arbor 1" hole							
		Fixture		D-73756					
		Plug Gage "A" .127 - .124		B-80224P					
		Template "B" [illegible]		[illegible]					
		Spec. Snap Ga. "C" [illegible]		C-73925					
		Plug Gage (Centrality)		B-74712					
		Qualify Ga.		B-73728					

OPERATION DESCRIPTION

Burr face and hand mill locating slot. (M/40X only)

(NOTE: M/40X becomes distinct at this point.)

PART No. 19767

OCC. No.
STD. HRS/C
STD. No.
EFF. DATE

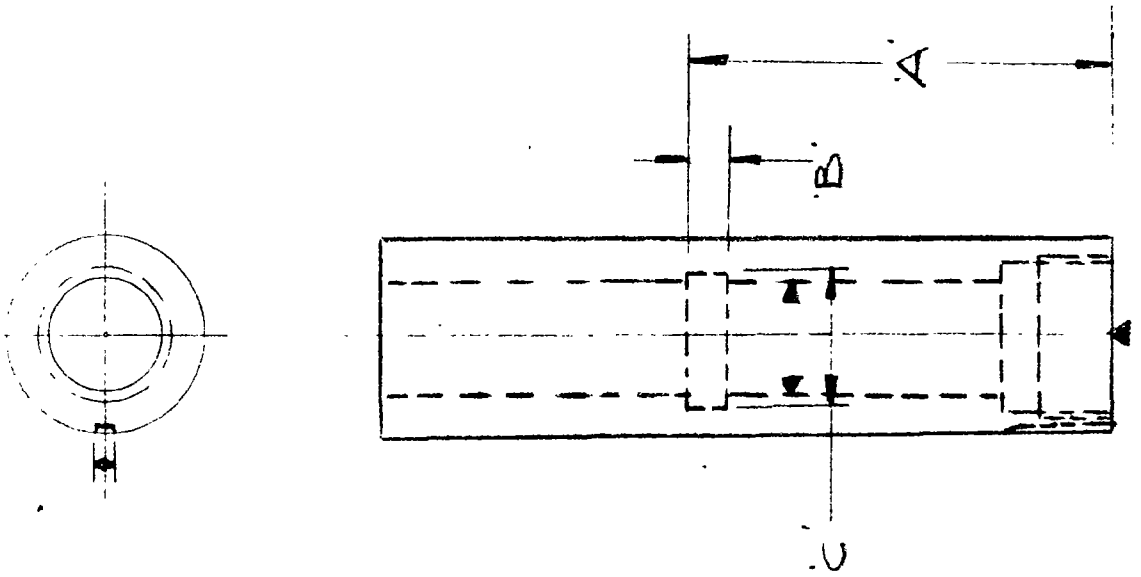
PART NAME Receiver **COOLANT** **SET UP TIME** **MODEL No.** 40X **OPER. No.** 8

TYPE [illegible] M&S 3-0 Mill **MACH. HRS.** **DEPT. No.** 54 [illegible] **PAGE** 1 **OF** 1

RD-6461

PART: RECEIVER M/40-X	PART No. 19161
OPERATION: DRILL BOLT LUG RECESS CUT	OPER. No.: 12 DEPT 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. # - M&S - 256316
1/2?/61 - Chg. dept. # - ECR - 255776
5/9/55 - Chg. dept. # - ZK - 249971
3/14/55 - Revised process - 249742 -

COMPILED BY:	APPROVAL & DATE:
K-12-22 SK	K

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126517

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

3/14/55 - Revised process - K - 249742 -
5/9/55 - Chg. dept. # - ZK - 249971
9/29/55 - Chg. dims. - ZK - 250501
11/12/58 - Specify shoulder squareness and finish - Hunt - 253441
12/12/58 - Add mirror - Hunt - 253484
1/[illegible]/61 - Chg. dept. # - ECR - 255776
7/5/61 - Chg. dept. # - M&S - 256316

TOOLS, GAGES AND EQUIPMENT	SPEED	FEED	GA. OR CAL.	M/40X	APPROVAL AND DATES
Carbide Recess cutter *			B-74769		* Change cutter as often as necessary to maintain smooth cut.
Auto Recessing Tool			C-73941		
Drill Jig			C-73759		
Inspection mirror *** 1/2"			Std.		*** Inspect 1 in 5
Dial Base Ga. "A" [illegible]			B-73760		
Flush Pin Ga. "B" [illegible]			C-73761		
Dial Base Ga. ** "C" [illegible]			D-74958		** Taper in the Locking shoulder must not exceed .001.

OPERATION DESCRIPTION

Drill Bolt Lug Recess cut

(M/40X only)

PART NO. 19767

OCC. No.
STD. HRS/C
STD. No.
EFF. DATE

PART NAME Receiver COOLANT SET UP TIME MODEL. No. 40X OPER. No. 12

TYPE Drill Press MACH. HRS. DEPT. No. [illegible] PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126517 R2527505

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126518

PROCESS RECORD – INSPECTION

GAUGES		USE	LIMITS	
TYPE	NUMBER		MAX.	MIN.
Dial Ga.	B-50240	Check depth of c'bore	1.151	1.149
Fed. Dia.	B-80057W	Check diameter of c'bore	1.003	.998
Setting Ga.	B-80064W		--	--
Flush Pin	B-74639	Check c'sink	.035	.025
Plug	B-80199V	Check diameter of Ebl. hole	.703	.700
Thread	B-80071U	Runout of threads	.003	.000
Thr. Segments	B-80072W		--	--
Ring	B-80078W	Min. Setting Ring 1 1/16 - 16 thd.	--	--
Thread	A-52823	Check depth of threads	.775	.650
Thread Plug	A-54568	Check tapped hole (Salvage Max.)	1 1/16	16 thd.
Snap	B-80020W	Length - M/721 - M/725 Long)	8.715	8.695
	B-80020P	Length (M/722 - & M/40X - M/725 Short	7.865	7.845
Base	D-51341	Check concentricity	.006	.000
			.004	.000
			.003	.000
Base	D-71554	Check runout		
Plug	B-80224P	Check width of cut	.127	.124
Template	B-73758	Check runout of cut	.845	.815
Snap	C-73925	Check depth of cut	.686	.680
Plug	B-74712	Check centrality of cut	--	--
Plug	B-73728	Check qualification of cut	--	--
Dial Base	D-73760	Check length	4.028	4.024
Flush	C-73761	Check width of recess	.368	.363
Dial Base	D-74950	Check depth of recess	.970	.960

DATES AND REASONS FOR REVISIONS 5/9/55 - New sheet - ZK - 249971
9/29/55 - Chg. dims. - ZK - 250501
10/30/57 - Added M/725 - ZK - 252593
4/29/58 - Added part #'s - ZK - 253021
7/5/61 - Chg. dept. # - MAS - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 256985

DESCRIPTION OF OPERATION: Product check for operation 12

MODEL NO. 721-722-40X - 725 - 700 - 700 ADL
PART NO. 20181-20182-19767-23755-23756 OPER. NO. Prod. check
16660-16849
BLANK DRAWING NO.
PART NAME Receiver
DEPT. NO. 54 PAGE 1 OF 1

RD-6491 REMINGTON ARMS CO., INC., ILION, N.Y.

BARBER - PRESALE R 0126518 R 2527506

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/17/58 - New operation - Hunt - 253086 -
7/5/61 - Chg. dept. # - M&S - 256316

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	40X	APPROVAL AND DATES
SPEED / FEED			
Broach		D-53963	
Fixture		D-54493	
Retriever		D-67025	
Broach Holders		B-52322	
Reducing Bushing		C-50196	
Pull Pin		A-54548	
Plug Gage (.700-.703)		B-80199V	

Place Front end of Receiver against face plate

OPERATION DESCRIPTION	PART No	19767
Broach to deburr		
(40X only)		
	OCC No.	
	STD. HRS/C	
	STD. No	
	EFF. DATE	

PART NAME Receiver COOLANT SET UP TIME MODEL No. 40X OPER No. 15
TYPE MACH. HRS. DEPT No. [redacted]54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126519 R2527507
BARBER - PRESALE R 0126519

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/6/61 - Retyped from 9/2/60
7/5/61 - Chg. dept. # - M&S - 256316
7/8/61 -Chg. fixture No. - Payne - 256348
8/18/61 - Add 700 - 700 ADL - Payne - 256441 -
1/22/62 - Chg. grade ident. HP 256095

TOOLS GAGES AND EQUIPMENT SPEED	FEED		GA OR CAL	M/721	M/722	M/40X	M/722-.222 725 - .222	M/725 (Long)	725 (Short)
#3 Cut		Set of 3 broaches:							
#4 return		#1 - .848" O/D		D-53986	D-53986	D-53986	D-53986	D-53986	D-53986
		#2 - .995"- O.D.		D-53987	D-53987	D-53987	D-53987	D-53987	D-53987
		#3 - 1.003" O.D.		D-54125	D-54125	D-54125	D-54125	D-54125	D-54125
	***	Fixture		D-83395	B-83395	D-83395	B-83395	D-83395	D-83395
		Triple Broach puller		C-50189	C-50189	C-54846	C-50189	C-50189	C-50189
		Face Plate		D-50191	D-50191	D-50191	D-50191	D-50191	D-50191
		Pull Pin		A-54548	A-54548	A-54548	A-54548	A-54548	A-54548
	/	Fed. Dial (1.004 - .998)		B-80066W	B-80066W	B-80066W	B-80066W	B-80066W	B-80066W
		Setting Ring		B-80064W	B-80064W	B-80064W	B-80064W	B-80064W	B-80064W
	*	Plug Gage (.452" - .449")		A-50249	A-50249	A-50249	A-50249	A-50249	A-50249
	**	Functional Gage		C-54609	C-53609	A-80658	C-53609	C-53609	C-53609

OPERATION DESCRIPTION	PART NO.		20181	20182	19767	18680 16849	23755	23756
Broach Bolt Guide slots.								
		Model 700 ADL	26575	26576		26577		
		Model 700 BDL	26578	26579		26580		

* Parts acceptable if No-Go enters when broaches are new.
** Functional gage must enter Receiver from rear end and rotate with lugs, in c'bore and recess.
*** Place front end of Receiver against face plate.
/ 1.005 acceptable for new broach.

ADL
700 - 700 BDL

PART NAME Receiver COOLANT Sun. #623 SET UP TIME MODEL NO 721 - 722 - 40X-725 OPER NO 16
TYPE MACHINE LaPointe Hydraulic Broach H.P. - 30 DEPT NO 54 PAGE 1 OF 1

RO 6461

BARBER - PRESALE R 0126520
BARBER - PRESALE R 0126520
R2527508

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126521

PROCESS RECORDS

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DATES AND REASONS FOR REVISIONS

11/7/58 - Retyped from 4/29/58
4/24/59 - Add air wrench and adapter - Hunt - 253859
6/10/59 - Add air vise - chip breaker - Hunt - 254018
5/20/60-Chg. Equip. reading-Ranney-254950
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 256985

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL	APPROVAL AND DATES 721	722	722-.222 725-.222	725-(Long)	725(Short)
1200	.0075	Head Stock Center		C-53953V	C-53953V	C-53953V	C-53953V	C-53953V
		Arbor and Sleeve		C-53953W	C-53953W	C-53953W	C-53953W	C-53953W
		Tail Stock		A-81744	A-81744	A-81744	A-81744	A-81744
		Snap (1.379"-1.372" dia.)		B-80103M	B-80103M	B-80103M	B-80103M	B-80103M
		Concentricity Ga.		B-80050W	B-80050W	B-80040W	B-80050W	B-80050W
		Bbl. End - .004" T.I.R.						
		Butt End - .006" T.I.R.						
		Tool Block - Lipe 3684-6		Std.	Std.	Std.	Std.	Std.
		Kendex Tool Holder KSER12		Std.	Std.	Std.	Std.	Std.
		Kendex Inserts SNU-422		K5H	K5H	K5H	K5H	K5H
		Air Wrench 1/2"		Std.	Std.	Std.	Std.	Std.
		Adapter		B-83067	B-83067	B-83067	B-83067	B-83067
		Air Vise - Max. stroke not to exceed 5/32"						
		Chip breaker - KENDEX CB316F		STD	STD	STD	STD	STD

OPERATION DESCRIPTION	PART No	721	722	722-.222 725-.222	725-(Long)	725(Short)
				16849		
	Model 700 ADL	26575	26576	26577		
	Model 700 BDL	26578	26579	26580		
Turn O.D.						
(M/721-722-725 700 - 700 BDL - ADL						
See Oper. 22 for M/40X						
	OCC. No.					
	STD. HRS/C					
	STD. No.					
	EFF. DATE					

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No 721-722-725-700-700 ADL OPER No 20

TYPE 12 x 18 Lipe Carbo Lathe MACH. HRS DEPT No 54 PAGE 1 OF 1

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BARBER - PRESALE R 0126521
R2527509

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126522

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/20/55 - New operation - ZK - 250129
4/24/59 - Add air wrench and adapter - Hunt - 253859
6/10/59 - Add air vise - Hunt - Add kendex bits - 253018
6/5/61 - Chg. T. Holder, Insert and add chip breaker - ECR - 256254
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS, GAGES AND EQUIPMENT		GA. OR CAL.	APPROVAL AND DATES
SPEED	FEED		40X
		Kendex tool holder KSIR12	Std.
1200	0075	[redacted]	[redacted]
		Headstock Center	C-53953V
		Arbor and Sleeve	C-53953W
		Tool Block	B-51710
		Form Bar	B-SR106V
		Tail Stock	A-51716W
		Snap Ga. (1.379-1.372 dia.)	B-[redacted]M
		Concentricity Ga.	B-80050W
		Bal. End - .004 T.I.R.	
		Butt end .006 T.I.R.	
		Air Wrench 1/2"	Std.
		Stamp "X"	Std.
		Adapter	B-83067
		[redacted] Kendex CPS16F	Std.
		[redacted]	
		[redacted]	

Air Vise - Max. stroke not to exceed 5/32.

OPERATION DESCRIPTION — PART No. 19767

Stamp identification and turn O.D. (M/40X only)

NOTE: Stamp "X" on top of tang and of Receiver on opposite side of locating slot for identification.

OCC. No.
STD. HRS/C
STD. No.
EFF. DATE

PART NAME Receiver COOLANT SET UP TIME MODEL No. 40X OPER. No. 22

TYPE 12 X 18 Lipe Production Lathe MACH. HRS. DEPT. No. 54 [redacted] PAGE 1 OF 1

BARBER - PRESALE R 0126522
R2527510

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126523
BARBER - PRESALE R 0126523
R2527511

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PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 9/18/61 - Retyped from 8/18/61
12/15/61 - Show gage tol. - Payne - 256881
1/22/62 - Chg. grade ident. - Payne - 256985

TOOLS GAGES AND EQUIPMENT		GA OR CAL	APPROVAL AND DATES					
SPEED	FEED		M/721	M/722	M/40X	M722-.222 M/725-.222	M725-(Long)	725(Short)
1200	Thru	Norton Grinding Wheel 20" x 6" x 12" type 1 57A46L5VBE	Std.	Std.	Std.	Std.	Std.	Std.
34	--	Norton Regulating Wheel 12" x6" x 5" type 7 Recessed A-801-ROR-30	Std.	Std.	Std.	Std.	Std.	Std.
		Dial Indicator Snap Ga.	B-72493	B-72493	B-72493	B-72493	B-72493	B-72493
		Setting Master Tol ±.001	B-72493A	B-72493A	B-72493A	B-72493A	B-72493A	B-72493A
OPERATION DESCRIPTION		PART NO	20181	20182	19767	18680 16849	23755	23756
		Model 700ABL	26575	26576		26577		
		Model 700BDL	26578	26579		26580		
Centerless grind								

PART NAME Receiver COOLANT Microgrind SET UP TIME MODEL NO ABL 700-700BDL-721-722-40X-725 OPER NO 24

TYPE MACHINE Landis #12 C'less grinder DEPT NO 54 PAGE 1 OF 1

RU 6461

BARBER - PRESALE R 0126523

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126524

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -
4/18/55 - Add M/722 - .222 EJC - 249847
10/30/57 - Added M/725 - ZK - 252593 -
4/29/58 - Added 725-.222 -ZK -253021
7/5/61 - Chg. dept. # - MAS - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 256985

TOOLS, GAGES AND EQUIPMENT		GA. OR CAL.	APPROVAL AND DATES					
SPEED	FEED		721	722	40X	722 - .222 725-.222	725 (Long)	725 (Short)
		10" Mill File	Std.	Std.	Std.	Std.		

OPERATION DESCRIPTION	PART No.	721	722	40X	722 - .222 725-.222	725 (Long)	725 (Short)
		20181	20182	19767	18680 16849	23755	23756
Model 700 ADL		26575	26576		26577		
Burr and break edge around both ends Model 700 BDL		26578	26579		26580		
	OCC. No.	1	1	1	1		
	STD. HRS/C	.605	.605	.605	.605		
	STD. No.	E-121	E-121	E-121	E-121		
	EFF. DATE	1/19/48	1/19/48	3/7/55	2/7/55 -		

PART NAME Remington COOLANT SET UP TIME MODEL No. ADL 700 - 700 BDL 721 - 722 - 40X - 725 OPER. No. 28
TYPE MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

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BARBER - PRESALE R 0126524

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126525

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/17/58 - Was oper 45 - Hunt -253086 -
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
9/14/61 - Added 8 to part # - Omitted when retyped
1/22/62 - Chg. grade ident. - Payne - 256985

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 721	722	722-.222			
		Drill Jig for all holes		D-52064	D-52064	D-52064			
		Drill 4 scope holes (Two at top rear & two at side rear.):							
		Guide rail for jig		D-52005	D-52005	D-52005			
3600	Hand	#32 drills (96° point)		A-54033	A-54033	A-54033			
		2-spindle mult. Head (29 A-202/A-2873)		Std.	Std.	Std.			
		Drill 2 scope holes (Top front)							
		Guide rail for jig		D-52005	D-52005	D-52005			
3600	Hand	#32 drills (96° point)		A-54033	A-54003	A-54003			
		2 spindle Mult. head (29A-202/A-2873)		Std.	Std.	Std.			
		Plug Gage (.119-.115 dia.)		B-80095W	B-80095W	B-80095W			
		Position Gage (.201-.199)		A-52722	A-52722	A-52722			

OPERATION DESCRIPTION	PART No.						
	Model 700 ADL	26575	26576	26577			
Drill scope screw, Guard Screw and gas escape holes.	700 BDL	26578	26579	26580			
(M/721, 722, 722-.222 ADL) 700 ADL - 700 BDL only)							
	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. 721 - 722 - 700 - 700 ADL OPER. No. 29
TYPE 1. LMS-12 Leland-Gifford 3 spindle drill press 2. LMS-14 Leland-Gifford 2 spindle Drill Press MACH. HRS. DEPT. No. 54 PAGE 1 OF 2

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BARBER - PRESALE R 0126525
R527513

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126526

PROCES_ RECORD

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 45 - Hunt - 253086
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 256985

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222
Drill	Gas Escape Hole					
		Guide rail for Jig		D-52005	D-52005	D-52005
1800	Hand	1/8" drill		Std.	Std.	Std.
		Jacob's Chuck (#32)		B-90085V	B-90085V	B-90085V
		Plug (.124" Go)		B-80002J	B-80002J	B-80002J
Drill	Front and rear Guard Screw holes					
1800	Hand	#3 Drill (96° point)		A-54031	A-54031	A-54031
		3-spindle Mult. head (11B-1759/A-2876)		Std.	Std.	Std.
		Plug Gage (.216-.212)		B-80004W	B-80004W	B-80004W
		Guide Rail for Jig		D-52079	D-52079	D-52079
Drill	Middle Guard Screw Hole					
1200	Hand	Step Drill		B-90114W	B-90114W	B-90114W
		Jacob's chuck (#32)		B-90085V	B-90085V	B-90085V
		Plug Gage (.139-.135)		B-80002H	B-8002H	B-8002H
		Plug (.133-.113 depth)		A-52013	A-52013	A-52013

NOTE: See sketch for use of Guide rail D-52079 and 3 spindle Mult. Head when changing over from 721-to 722

NOTE: The scope and Gas escape holes are set up on the 3 spindle machine, and the Guard Screw holes on the two spindle.

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL NO. 721 - 722 - 700-700 ADL OPER NO 29
TYPE 1. LMS-12 Leland-Gifford 3 spindle Drill Press MACH. HRS. DEPT. NO. 54 PAGE 2 OF 2
2. LMS-14 Leland-Gifford 2 spindle Drill Press MACHINE

BARBER - PRESALE R 0126526
R2527514

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126527
R2527515

BARBER - PRESALE R 0126527

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 51 - Hunt - 253086 -
7/5/61 - Chg. dept. # - M&S - 256316 -

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES 725 (Long	725(Short)	725-222			
SPEED	FEED								
		Drill Jig for all holes		D-52064	D-52064	D-52064			
Drill 4 scope holes (Two at top rear & two at side rear.):									
		Guide rail for jig		D-52005	D-52005	D-52005			
3600	Hand	#32 drills (96° point)		A-54033	A-54033	A-54033			
		2-spindle mult. head (29 A-202/A-2873)		Std.	Std.	Std.			
Drill 2 scope holes (Top front)									
		Guide rail for jig		D-52005	D-52005	D-52005			
3600	Hand	#32 drills (96° point)		A-54033	A-54033	A-54033			
		2 spindle Mult. head (29A-202/A-2873)		Std.	Std.	Std.			
		Plug Gage (.119-.115 dia.)		B-80095W	B-80095W	B-80095W			
		Position Gage (.201-.199)		A-52722	A-52722	A-52722			

OPERATION DESCRIPTION	PART No.	23755	23756	16849
Drill scope screw, Guard Screw and gas escape holes. (M/725 only)	OCC. No.			
	STD. HRS/C			
	STD. No.			
	EFF. DATE			

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 725 OPER. No. 30
TYPE 1. LMS-12 Leland-Gifford 3 spindle drill press 2. LMS 14 Leland Gifford 2 spindle Drill Press MACH. HRS DEPT. No. 54 PAGE 1 OF 2

BARBER - PRESALE R 0126527

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126528
BARBER - PRESALE R 0126528
R2527516

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 51 - Hunt - 253086 -
7/5/61 - Chg. dept. # - M&S - 256316 -

TOOLS GAGES AND EQUIPMENT	SPEED	FEED	GA. OR CAL.	APPROVAL AND DATES 725 (Long	725(Short)	725-222			
Drill Jig for all holes				D-52064	D-52064	D-52064			
Drill 4 scope holes (Two at top rear & two at side rear.):									
Guide rail for jig				D-52005	D-52005	D-52005			
#32 drills (96° point)	3600	Hand		A-54033	A-54033	A-54033			
2-spindle mult. head (29 A-202/A-2873)				Std.	Std.	Std.			
Drill 2 scope holes (Top front)									
Guide rail for jig				D-52005	D-52005	D-52005			
#32 drills (96° point)	3600	Hand		A-54033	A-54033	A-54033			
2 spindle Mult. head (29A-202/A-2873)				Std.	Std.	Std.			
Plug Gage (.119-.115 dia.)				B-80095W	B-80095W	B-80095W			
Position Gage (.201-.199)				A-52722	A-52722	A-52722			
PART No.				23755	23756	16849			

OPERATION DESCRIPTION

Drill scope screw, Guard Screw and gas escape holes.

(M/725 only)

OCC. No.
STD. HRS/C
STD. No.
EFF. DATE

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 725 OPER. No. 30

TYPE 1. LMS-12 Leland-Gifford 3 spindle drill press 2. LMS 14 Leland Gifford 2 spindle Drill Press MACH. HRS DEPT. No. 54 PAGE 1 OF 2

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BARBER - PRESALE R 0126528

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 51 - Hunt - 253086 -
7/5/61 - Chg. dept. # - M&S - 256316 -
2/9/62 - Obsolete - Payne -257092

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 725 (Long	725(Short)	725-222
		Drill Jig for all holes		D-52064	D-52064	D-52064
		Drill 4 scope holes (Two at top rear & two at side rear.):				
		Guide rail for jig		D-52005	D-52005	D-52005
3600	Hand	#32 drills (96° point)		A-54033	A-54033	A-54033
		2-spindle mult. head (29 A-202/A-2873)		Std.	Std.	Std.
		Drill 2 scope holes (Top front)				
		Guide rail for jig		D-52005	D-52005	D-52005
3600	Hand	#32 drills (96° point)		A-54033	A-54033	A-54033
		2 spindle Mult. head (29A-202/A-2873)		Std.	Std.	Std.
		Plug Gage (.119-.115 dia.)		B-80095W	B-80095W	B-80095W
		Position Gage (.201-.199)		A-52722	A-52722	A-52722
		PART No.		23755	23756	16849

OPERATION DESCRIPTION

Drill scope screw, Guard Screw and gas escape holes.

(M/725 only)

OCC No.
STD. HRS/C
STD. No.
EFF. DATE

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. 725 OPER. No 30
TYPE 1. LMS-12 Leland-Gifford 3 spindle drill press 2. LMS 14 Leland Gifford 2 spindle Drill Press MACH HRS. DEPT. No. 54 PAGE 1 OF 2

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BARBER - PRESALE R 0126529
BARBER - PRESALE R 0126529
R2527517

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCE RECORD

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 51 - Hunt - 53086

7/5/61 - Chg. dept. # - M&S - 256316

2/9/62 - Remove - Payne - 257092

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 725 Long	725 Short	725-222
Drill Gas Escape Hole						
		Guide rail for jig		D-52005	D-52005	D-52005
1800	Hand	1/8" drill		Std.	Std.	Std.
		Jacob's Chuck (#32)		B-90085V	B-90085V	B-90085V
		Plug (.124" Go)		B-80002J	B-80002J	B-80002J
Drill Front & rear Guard Screw holes.						
1800	Hand	#3 Drill (96° point)		A-54031	A-54031	A-54031
		3-spindle Mult. head (11B-1759/A-2876)		Std.	Std.	Std.
		Plug Gage (.216-.212)		B-80004W	B-80004W	B-80004W
		Guide Rail for Jig		D-52079	D-52079	D-52079

NOTE: - See sketch for use of Guide rail D-52079 and 3 spindle Mult. Head when changing over from M/725 Long Action to Short Action.

NOTE: - The scope and Gas escape holes are set up on the 3 spindle machine, and the Guard Screw holes. on the two spindle.

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No 725 OPER No 30

TYPE 1. LMS-12 Leland-Gifford 3 spindle Drill Press MACH. HRS. DEPT. No 54 PAGE 2 OF 2

2. LMS-14 Leland-Gifford 2 spindle Drill Press MACHINE

RD-6463

BARBER - PRESALE R 0126530 R2527518
BARBER - PRESALE R 0126530

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORD

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 51 - Hunt - 53086
7/5/61 - Chg. dept. # - M&S - 256316

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES 725 Long	725 Short	725-222
		Drill Gas Escape Hole				
		Guide rail for Jig		D-52005	D-52005	D-52005
1800	Hand	1/8" drill		Std.	Std.	Std.
		Jacob's Chuck (#32)		B-90085V	B-90085V	B-90085V
		Plug (.124" Go)		B-80002J	B-80002J	B-80002J
		Drill Front & rear Guard Screw holes.				
1800	Hand	#3 Drill (96° point)		A-54031	A-54031	A-54031
		3-spindle Mult. head (11B-1759/A-2876)		Std.	Std.	Std.
		Plug Gage (.216-.212)		B-80004W	B-80004W	B-80004W
		Guide Rail for Jig		D-52079	D-52079	D-52079

NOTE: - See sketch for use of Guide rail D-52079 and 3 spindle Mult. Head when changing over from M/725 Long Action to Short Action.

NOTE: - The scope and Gas escape holes are set up on the 3 spindle machine, and the Guard Screw holes. on the two spindle.

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL NO. 725 OPER NO 30
TYPE 1. LMS-12 Leland-Gifford 3 spindle Drill Press MACH. HRS. DEPT. No 54 PAGE 2 OF 2
2. LMS-14 Leland-Gifford 2 spindle Drill Press MACHINE

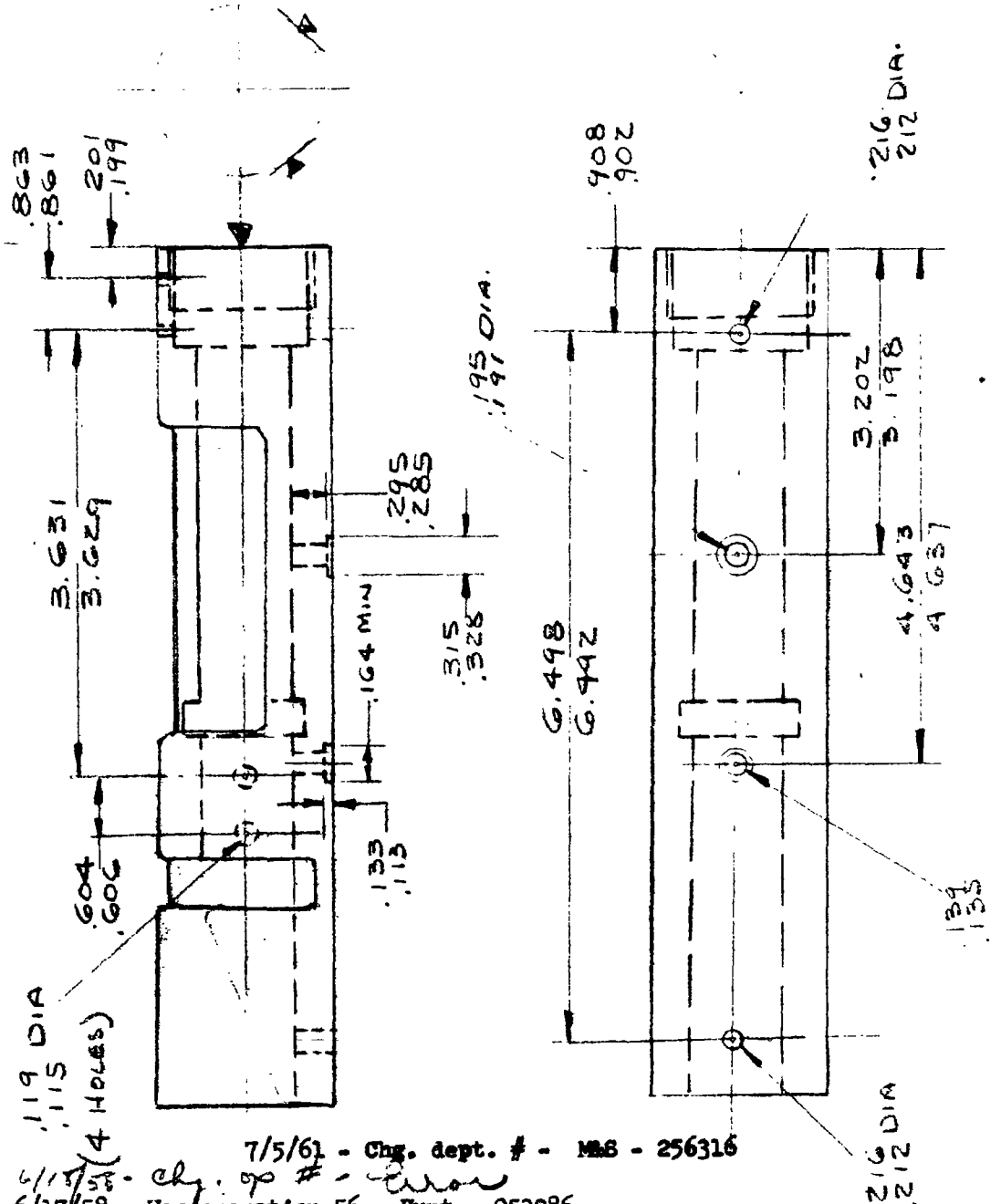
RD 6463

BARBER - PRESALE R 0126531
BARBER - PRESALE R 0126531 R2527519

TPR-7

PART: RECEIVER M145-A	PART No. 17767
OPERATION: DRILL SCOPE HOLES & GUARD SCREW HOLES AND EJECTOR SCREW HOLE	OPER. No.: 31 ~~51~~ ~~41~~ Dept ~~[redacted]~~ 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. # - M&S - 256316
6/15/58 - chg. op # - Huron
6/17/58 - Was operation 56 - Hunt - 253086 -
3/14/55 - Revised process - EJC - 249742 -

COMPILED BY: 12 22 54	APPROVAL & DATE:

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS
6/17/58 - Was operation 56 - Hunt - 253086
7/5/61 - Chg.dept. # - M&S - 256316

TOOLS, GAGES AND EQUIPMENT		GA. OR CAL.	40X	APPROVAL AND DATES
SPEED	FEED			
		Drill Jig for all holes	D-52064	
Drill		4 scope holes (Two at top, rear and two at side, rear)		
3600	Hand	#32 drills (96° point)	A-54033	
		Guide rail for jig	D-52005	
		2 spindle Mult. head (29A-202/A-2873)	Std.	
Drill		2 scope screw holes (Top, front)		
3600	Hand	#32 drills (96° point)	A-54033	
		Guide rail for jig	D-52005	
		2 spindle Mult. head (29A-202/A-2873)	Std.	
		Plug Gage (.119-.115 dia.)	B-80095W	
		Position Gage (.201-.199)	A-52722	

OPERATION DESCRIPTION

Drill scope, Guard, and Ejector Screw holes.

(M/40X only)

PART No. 19767

OCC No
STD. HRS/C
STD. No.
EFF DATE

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No 40X OPER No 1 31 2

TYPE 1. LMS-12 Leland-Gifford 3 spindle Drill Press
~~2. LMS-14 Leland Gifford 2 spindle Drill Press~~ MACH. HRS DEPT. No 54 PAGE OF

RD-6461

BARBER - PRESALE R 0126533
BARBER - PRESALE R 0126533
R2527521

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCES. RECORD

DATES AND REASONS FOR REVISIONS 6/17/58 - Was operation 56 - Hunt - 253086 -
3/27/58 - Chg. plug ga. - Hunt - 253274
7/5/61 - Chg. dept. # - M&S - 256316

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL. 40X APPROVAL AND DATES
		Step Drill Ejector Screw Hole	
1800	Hand	Step Drill	A-73750
		Jacob's Chuck	B-90085V
		Plug Gage (.195-.191)	B-80004T
		Plug Gage (.295-.285 depth)	A-82765
		Drill Front and Rear Guard Screw holes	
1800	Hand	#3 Drill (96° point)	A-54031
		Guide rail for Jig	D-52079
		3 spindle Mult. Head (11B-1759/A-2876)	Std.
		Plug Gage (.216-.212)	B-80004W
		Drill Middle Guard Screw Hole	
1200	Hand	Step Drill	B-90114W
		Jacob's chuck #32	B-90085V
		Plug Gage (.139-.135)	B-80002H
		Plug (.133-.113 depth)	A-52013

NOTE: The scope and Ejector Screw holes are set up on the 3 spindle machine and the Guard Screw holes on the 2 spindle machine.

NOTE: Setting of Guide rail D-52079 is identical to setting used for M/722 - See sketch on Op. #52.

NOTE: Scope holes must be on top of Receiver - Check that "X" on tang end is on top.

PART NAME Receiver COOLANT Spl. Oil SET UP TIME MODEL No 40X OPER. No 31
TYPE MACH. HRS. MACHINE DEPT. No. 54 PAGE 2 OF 2

RD 6463

BARBER - PRESALE R 0126534
BARBER - PRESALE R 0126534
R527522

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126535

PROCES. RECORDS

DATES AND REASONS FOR REVISIONS 9/15/61 - Retyped from 8/18/61 - Payne - 256580 - chgg. reading.
1/19/62 - Chg. grade ident. - Payne - 256985

SPEED*	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES 721	722	722-222 725-.222	725 (Long)	725 (Short)
44	1 3/8"	Right hand cutters		B-50595W	B-51535V	B-51535V	B-50595W	B-51535V
44	1 3/8"	Left Hand cutters		B-50595V	B-51535W	B-51535W	B-50595V	B-51535W
		Fixture (Right Hand)		E-50577W	E-50577W	E-50577W	E-50577W	E-50577W
		Fixture (Left Hand)		E-50577V	E-50577V	E-50577V	E-50577V	E-50577V
		Special spacing collar		A-52248	A-52248	A-52248	A-52248	A-52248
		Set-up Block		C-50579	C-50579	C-50579	C-50579	C-50579
		Arbor (A50-1½"-B18-4)		B-90057W	B-90057W	B-90057W	B-90057W	B-90057W
	*	Position and length gage		B-50257W	B-50257V	B-50257V	B-50257W	B-50257V
		Base Gage (Centrality)		D-50716	D-50716	D-50716	D-50716	D-50716
		Locator tongue		B-50719W	B-50719W	B-50719W	B-50719W	B-50719W
		Plug (.505" - .490" Width)		B-80112W	B-80112W	B-80112W	B-80112W	B-80112W -Use for set-up & prod. only

NOTE: Use .700" and .6375" feelers for set-up.
NOTE: Where gages are common, see sketch sheet for any difference in dimensions.
NOTE: Orient part so scope holes are on top of Receiver.

OPERATION DESCRIPTION	PART NO.					
	M/700ADL	26575	26576	26577		
	M/700BDL	26578	26579	26580		
		20181	20182	18680	23755	23756
Plunge mill Ejection Port and Magazine slot (M/721-722-700-700ADL-725)						

* NOTE: Position must be held to Ga. Length of slot can be 1/16 shorter than min. on Ga. but no longer.

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No 721-722-725-700-700ADL OPER No 32
TYPE MACHINE Cincinnati 2/24 Plain Miller DEPT No 54 PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126535 R2527523

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742
4/18/55 - Add M/722 - .222 EJC - 249847
10/30/57 - Add M/725 MK - 252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne -256441
9/15/61 - Add note - Payne -256580
12/21/61 - Add note - Payne - 256902
APPROVAL AND DATES 1/22/62 - Chg. grade ident. EP-256985

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	721	722	722 - .222 725-.222	725 (Long)	725 (Short)
1295	6	End Mills (Four) 7/16" x 1/2" shank x 4 flutes x double end.		Std.	Std.	Std.	Std.	Std.
		(4) fixtures plug sub-base and template support		E-51498	E-51498	E-51498	E-51498	E-51498
		Tracer finger set		B-52594	B-52594	B-52594	B-52594	B-52594
		Template		B-51521	B-51521	B-51521	B-51521	B-51521
		Weldon Holders		B-90053S	B-90053S	B-90053S	B-90053S	B-90053S.
		Locator tongue		B-50719W	B-50719W	B-50719W	B-50719W	B-50719W
		Plug (.525"-.510 width)		B-80007U	B-80007U	B-80007U	B-80007U	B-80007U) Use for set-up
		Plug (Length)		A-50296W	A-50296V	A-50296V	A-50296W	A-50296V) & prod. only
		Base (Position)		D-50221	D-50221	D-50221	D-50221	D-50221
		Base (Centrality)		D-50716	D-50716	D-50716	D-50716	D-50716
		OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	23755	23756
				NOTE: Feed once around		Remove Rec. & flush to remove chips before 2nd cut.		
				NOTE: Where gages are common, see sketch sheet for any difference in dimensions.				
		Profile Ejection Port and Magazine slot	M/700 ADL	26575	26576	26577		
		(M/721-722 ~~ADL~~ 700 - 700 ADL	M/700 ADL	26578	26579	26580		
		M/725	OCC. No.	58	58	58		
			STD. HRS/C	2.467	2.484	2.484		
			STD. No.	E-673	E-674	E-674		
			EFF. DATE	9/1/51	9/1/51	9/1/51		

PART NAME Receiver COOLANT Shell Oil #327 SET UP TIME MODEL No. 721 - 722 - 725 OPER. No. 36
TYPE Cincinnati 4 spindle /360° profiler MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

AEL
700 - 700 ADL

RD-6461

BARBER - PRESALE R 0126536
R2527524
BARBER - PRESALE R 0126536

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126537
BARBER - PRESALE R 0126537
R2527525

30

PROCESS ..ECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -

10/30/57 - Added M/725 - ZK - 252593 — 1/22/62 - chg. grade ident. - Payne - 256985

4/29/58 - Added 725 - 222 - ZK - 253021

7/5/61 - Chg. dept. # - MBS - 256316

8/18/61 - Add 700 - 700 ADL - Payne - 256441

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722 - .222 M/725 - .222	725 (Long)	725 (Short)
#6 cut		Retangular Broach		D-50079	D-50078	D-54108	D-50079	D-50078
#3 Return		Fixture		D-54489	D-54489	D-54489	D-54489	D-54489
		Special Broach Puller		C-50192	C-50192	C-50192	C-50192	C-50192
		[illegible]		[illegible]	[illegible]	[illegible]		
		Locator Tongue		B-50719W	B-50719W	C-50719W	B-50719W	B-50719W
		Plug (Length)		A-51294W	A-51294V	A-51294V	A-51294W	A-51294V
		Plug (.545-.535 width)		B-80007T	B-80007T	B-80007T	B-80007T	B-80007T
		Plug (.576-.565 width)		B-80007R	B-80007R	B-80007R	B-80007R	B-80007R
		Base Gage (Position)		D-50221	D-50221	D-50221	D-50221	D-50221
		Base Gage (Centrality)		D-50716	D-50716	D-50716	D-50716	D-50716

OPERATION DESCRIPTION		PART No.	M/721	M/722	M/722 - .222 M/725 - .222	725 (Long)	725 (Short)
			20181	20182	18680 16849	23755	23756
			NOTE: Where gages are common, see sketch sheet for any difference in dimensions.				
Broach Ejection Port and Magazine slot. (M/721-722 [illegible] M/700 ADL - 700 ADL. NOTE: M/722-.222 Cal. (#18680) becomes distinct at this operation.) Also M/700 ADL #26577 & M/700 ADL - #26580		M/700 ADL	26575	26576	26577		
		M/700 ADL	26578	26579	26580		
		OCC. No.	92	92	92		
		STD. HRS/C	1.915	1.915	1.915		
		STD. No.	E-143	E-143	E-143		
		EFF. DATE	6/30/50	11/19/48	11/19/48		

PART NAME Receiver COOLANT Thread Cut #10 SET UP TIME MODEL No. 721 - 722 - 725 ADL 700 - 700 ADL OPER. No. 40

TYPE LaPointe Hydraulic Broach HP-30 MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-8461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126538
R2527526

BARBER - PRESALE R 0126538

PROCESS RECORDS

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DATES AND REASONS FOR REVISIONS 6/1/61 - Retyped from 7/31/59
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
12/21/61 -Add note and new cutter for M/700 - Payne - 256902
1/22/62 - Chg. cutter and grade ident. - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725 - .222	M/40X	M/725 (Long)	725 (Short)
Set form cutters		B-50623W	B-50623V	B-50623V	B-50623V	B-50623W	B-50623V
1 Form cutter Not used on M/700		B-50623T	B-50623T	B-50623T	B-50623T	B-50623T	B-50623T
For M/700 Use-B-50623T R							
2 Fixtures (R&L.H)		E-50605	E-50605	E-50605	E-50605	E-50605	E-50605
Cam Roller (1 thru 12)		E-50605	E-50605	E-50605	E-50605	E-50605	E-50605
Arbor (#50-1½-B18-4)		B-90057W	B-90057W	B-90057W	B-90057W	B-90057W	B-90057W
Cycle Selector		D-53526	D-53526	D-53526	D-53526	D-53526	D-53526
Dial Base Gage		D-51312	D-51312	D-51312	D-51312	D-51312	D-51312
Length Gage		B-52595W	B-52595V	B-52595V	B-52595V	B-52595W	B-52595V
Adj. Snap Gage 1.620-1.615		B-80238W	B-80238W	B-80238W	B-80238W	B-80238W	B-80238W
Plug Gage		A-52843W	A-52843V	A-52843V	A-52843V	A-52843W	A-52843V
Dial Base Gage (Radii)		D-51478	D-51478	D-51478	D-51478	D-51478	D-51478

OPERATION DESCRIPTION	PART NO.	20181	20182	18680 16849	19767	23755	23756
Finish mill Ejection Port, Extraction cam of Bolt Handle slot, and radius on tang. Burr right side, front end intersection of Ejection Port and Bolt spline. NOTE: - Identification mark to be on top side when located in fixture.(M/40X only)	M/700 ADL	26575	26576	26577			
	M/700 BDL	26578	26579	26580			

PART NAME Receiver COOLANT Sol. Oil SET UP TIME MODEL No 700 - 700 BDL 721 - 722 - 40X - 725 OPER No 44
TYPE MACHINE Cinn. 2/24 R&F Miller DEPT No 54 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126539 R2527527

BARBER - PRESALE R 0126539

PROCES RECORDS

DATES AND REASONS FOR REVISIONS 11/26/57 - New operation - ZK - 252628
3/25/58 - Add note - Hunt - 252925
4/29/58 - Added M/725 - 222 -ZK - 253021
7/5/61 - Chg. dept. # - MAS - 256316
2/9/62 - Remove - Payne - 257092

TOOLS, GAGES AND EQUIPMENT	SPEED	FEED	GA. OR CAL.	APPROVAL AND DATES 725 (Long)	725 (Short)	M/725 - 222	
Eclipse Rad. drive c'bore Cutter Rc-265 - 1 1/8 dia.				Std.	Std.	Std.	
Eclipse Rad. Drive holder RCH-M2				Std.	Std.	Std.	
* Drill Jig				D-82108	D-82108	D-82108 *	It is permissible to shim the jig feet uniformly (about .004") to get dim's. "B" and "C" to be zero on the base gage. The shims are needed for milling the right side only.
Dial Base Ga.				D-82129	D-82129	D-82129	
"A" Dim.				280-285	280-285	280-.285	
"B" - Dim. - Right side				340-.332	.340-.332	.340-.332	
"C" - Dim. Left side				.503-.495	.503-.495	.503-.495	
"D" - Dim.				7.401-7.395	6.551-6.545	6.551-6.545	

OPERATION DESCRIPTION	PART No.	23755	23756	16[illegible]
Buttmill Safety clearance slots (M/725 only) M/725 - 222)	OCC No.			
	STD HRS/C			
	STD. No			
	EFF. DATE			

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 46
TYPE #3 Allen Drill Press - Auto Feed MACH HRS DEPT No 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 012540 R 527528

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 11/26/57 - New operation - ZK - 252628
3/25/58 - Add note - Hunt - 252925
4/29/58 - Added M/725 - 222 -ZK - 253021
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS, GAGES AND EQUIPMENT	SPEED	FEED	GA. OR CAL.	APPROVAL AND DATES 725 (Long)	725 (Short)	M/725 - 222	
Eclipse Rad. drive c'bore Cutter Rc-265 - 1 1/8 dia.				Std. Obsolete	Std.	Std.	Call Bennett
Eclipse Rad. Drive holder, RCH-M2				Std. Remove add use for 725 Rec	Std.	Std.	
Drill Jig	*			D-82108	D-82108	D-82108 *	It is permissible to shim the jig feet uniformly (about .004") to get dim's. "B" and "C" to be zero on the base gage.
Dial Base Ga.				D-82129	D-82129	D-82129	
"A" Dim.				280-285	280-285	280-.285	
"B" - Dim. - Right side				340-.332	.340-.332	.340-.332	The shims are needed for milling the right side only.
"C" - Dim. Left side				.503-.495	.503-.495	.503-.495	
"D" - Dim.				7.401-7.395	6.551-6.545	6.551-6.545	

OPERATION DESCRIPTION	PART No.	23755	23756	16849	
Buttmill Safety clearance slots (M/725 only) M/725 - 222)	OCC. No.				
	STD. HRS/C				
	STD. No.				
	EFF. DATE				

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 46
TYPE #3 Allen Drill Press - Auto Feed MACH HRS DEPT. No 54 PAGE 1 OF 1

RD-6451

BARBER - PRESALE R 012540

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCES_ RECORDS

DATES AND REASONS FOR REVISIONS

11/26/57 - Was oper 58 - 252628 - ZK -
4/29/58 - Added M/725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 256985 -

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES					
SPEED	FEED			721	722	722-.222 M/725 - .222	40X	725(Long)	725 (Short)
78	1/2"	Cutter		C-53133	C-53133	C-53133	C-53133 *	C-53133	C-53133
		Slotting Saw		C-53133V	C-53133V	C-53133V	C-53133V	C-53133V	C-53133V
		Fixture (R.H.)		E-50625W	E-50625W	E-50625W	E-50625W	E-50625W	E-50625W
		Fixture (L.H.)		E-50625V	E-50625V	E-50625V	E-50625V	E-50625V	E-50625V
		Spacing collar		C-53133U	C-53133U	C-53133U	C-53133U	C-53133U	C-53133U
		Arbor (#50-1½B-18-4)		B-90057W	B-90057W	B-90057W	B-90057W	B-90057W	B-90057W
		Plug Gage (.097"-.092)		B-80001S	B-80001S	B-80001S	B-80001S	B-80001S	B-80001S
		Sight Gage		B-51700W	B-51700W	B-51700V	B-51700X	B-51700W	B-51700W
		Dial (Pos. sidewise)		D-51617	D-51617	D-51617	D-51617	D-51617	D-51617
		Dial (Pos. and depth of radii)		D-50776	D-50776	D-50776	D-50776	D-50776	D-50776
		Plug (.312-.305)		A-53764	A-53764	A-53764	A-53764	A-53764	A-53764
		Template (Max. runout)		B-54007	B-54007	B-54007	B-54007	B-54007	B-54007
		NOTE: - Run-out on .310" cutter may exceed max. limit on B-54007 but must not break into Magazine slot.							
		M/700 ADL		26575	26576	26577			
		700 ADL		26578	26579	26580			
OPERATION DESCRIPTION			PART No.	20181	20182	18680 16849	19767	23755	23756
Mill Fire control slots				Differential between cutter diss. must not exceed .132" ± .001"					
				NOTE; Use fixture with right-angle subbase so that Receiver is in vertical position.					
			OCC. No.						
			STD. HRS/C	* Min. Dia. of cutter must not be less than 3.281 for 40X only.					
			STD. No.						
			EFF DATE						
							ADL 700 - 700 ADL		

PART NAME Receiver COOLANT SET UP TIME MODEL No 721-722-40X-725 OPER No 47

TYPE 2/24 Cincinnati Plain Miller MACH. HRS. DEPT. No 54 PAGE 1 OF 1

RD-6441

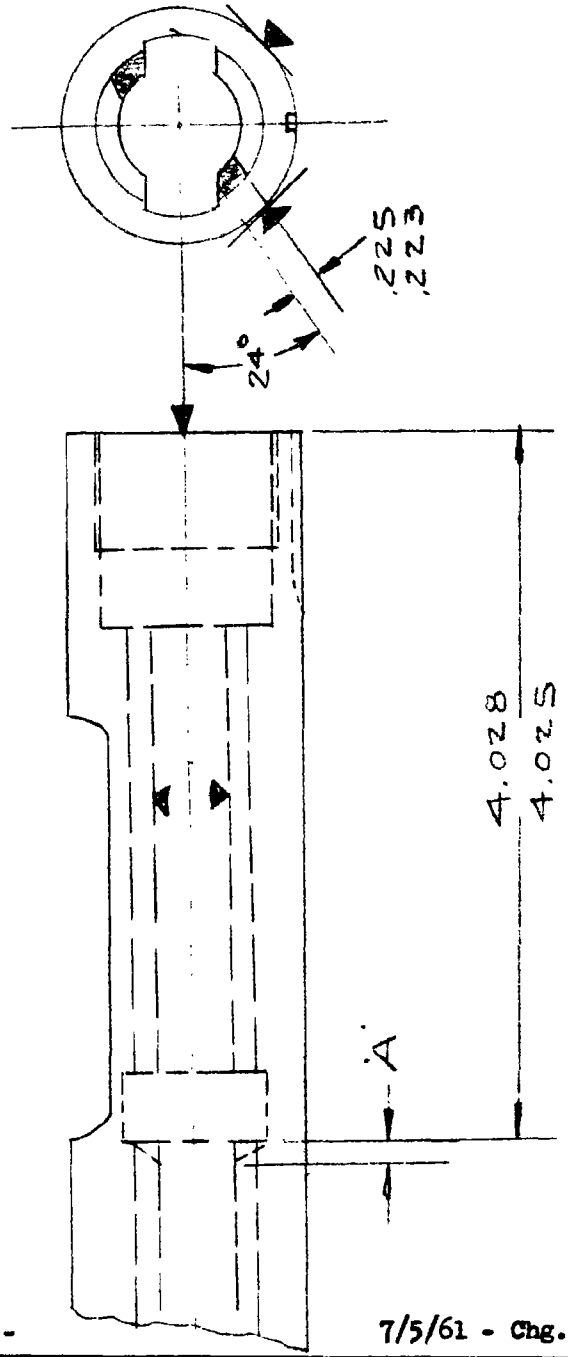
BARBER - PRESALE R 0126541 R2527529

BARBER - PRESALE R 0126541

TPR-7

PART: RECEIVER M/40-X	PART No. 19767
OPERATION: SHAVE PR. MARY SEATING CAM E	OPER. No.: 48 DEPT – 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/20/59 - Was op. 109-Hunt
6/17/58-Was 48-Hunt - 253086 -

7/5/61 - Chg. dept. # - M8 - 256316

COMPILED BY: K-12-22 SJ	APPROVAL & DATE: 3/14/55 - Revised EJC - 249742 -

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

PROCES RECORDS

5/11/59 - Was oper. 109 - Hunt - 253922
7/20/59 - B-83197 replaced A-51991 - Hunt - 254139
1/22/62 - Chg. grade ident. - Payne - 256985
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
10/15/61 - Show corr. tol. for M/40X - Payne - 256881

SPEED	FEED	TOOL GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725-.222	M/40X	M/725(Long)	725(Short)
	1	Notch Shaving Tool *		A-53891W	A-53891W	A-53891W	A-53891V	A-53891W	A-53891W
		Setting Ga. for cutter		A-51880W	A-51880W	A-51880W	A-51880V	A-51880W	A-51880W
		Fixture		D-51863	D-51863	D-51863	D-73763 D-73763W	D-51863	D-51863
		Cam Guide							
		Arbor		C-54545	C-54545	C-54545	C-73764	C-54545	C-54545
		Dial Gage (Depth) ± .005 (Except .0035)		D-51843	D-51843	D-51843	D-73766 A-73765	D-51843	D-51843
		Master Receiver which is (40X)							
		(See Sketch)							
		Setting Master		B-83197	B-83197	B-83197		B-83197	B-83197
		* NOTE: For min. cutter diam. M/725L M/721-722-700 .996" M/40X .948							
		NOTE: 721 - 722 - 725 Dev. [illegible] .006 on the [illegible]							
		Cam					D-73763V		
		NOTE: - Cam and cam Guide		D-73763W&V	May be used	on M/721 - 722 - 725 and vice versa -			

OPERATION DESCRIPTION	PART NO.	20181	20182	18680 18649	19767	23755	23756
	M/700 ADL	26575	26576	26577			
	M/700 BDL	26578	26579	26580			
Shave primary seating cams							

ADL
700 - 700 BDL

PART NAME Receiver COOLANT Lard Oil SET UP TIME MODEL No 721 - 722 - 40X-725 OPER No 48
TYPE Modern Bond Shaving Machine MACHINE DEPT No 54 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126543 R2527531
BARBER - PRESALE R 0126543

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126544

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - 249742 - EJC -
4/1/55 - Added collet - ZK - 249804 - 8/18/61 - Add M/700 - 700 ADL - Payne - 256441
10/30/57 - Added M/725 - ZK - 252593 1/22/62 - Chg. grade ident. -corr. suffix - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725-.222	M/40X	725 (Long)	725 (Short)
		Drill Jig (All elements)		D-51208	D-51208	D-51208	D-51208	D-51208	D-51208
		Guide rail (All elements)		D-51973	D-51973	D-51973	D-51973	D-51973	D-51973
Butt Mill holes, both sides:									
1000	Hand	Butt mill (.1495") (2)		A-52927	A-52928	A-52928	A-52928	A-52927	A-52927
		Slip Bushings (4)		A-52945W	A-52945W	A-52945W	A-52945W	A-52945W	A-52945W
		2-spindle Multiple Head (29B-200/A-3103)		Std.	Std.	Std.	Std.	Std.	Std.
		Depth gage (.158-.138)		B-80116T	B-80116T	B-80116T	B-80116T	B-80116T	B-80116T
Drill Holes, one side:									
		L&G collet (120 dia.)		B-90166U	B-90166U	B-90166U	B-90166U	B-90166U	B-90166U
3600	1¼"	#31 Drill, 96° point (2)		A-54034	A-54034	A-54034	A-54034	A-54034	A-54034
		Slip Bushings (2)		A-52945V	A-52945V	A-52945V	A-52945V	A-52945V	A-52945V
		2-spdl.Mult.Head(29B-200/A-3337)		Std.	Std.	Std.	Std.	Std.	Std.
OPERATION DESCRIPTION			PART No.	20181	20182	18680 16849	19767	23755	23756
Butt Mill, drill, and ream fire control holes.			M/700 ADL	26575	26576	26577			
			M/700 EDL	26578	26579	26580			
			OCC. No.	19	19	19	19		
			STD. HRS/C	4.960	4.960	4.960	4.960		
			STD. No.	14063	14063	14063	14063		
			EFF. DATE	10/10/49	10/10/49	10/10/49	10/10/49		
							ADL 700 - 700 EDL		

PART NAME Receiver COOLANT Sol.011 SET UP TIME 721-722-40X -725 MODEL No. 60 OPER. No.
TYPE #1 LMS-12" Leland Gifford 3 spindle Press MACH. HRS. DEPT. No. 54 PAGE 1 OF 2

RD-6461

BARBER - PRESALE R 0126544
R2527532

PROCESS RECORD

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -
5/10/57 - Chg. Equip. Reading - FH - 252219
10/30/57 - Added M/725 - ZK - 252593 -
4/22/58 - Added 725 - .222 - ZK - 253021
7/5/61 - Chg. dept. # - MLS - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
9/27/61 - Replace drill with reamer - Payne - 256626
12/11/61 - Chg. plug gage -Payne - 256862
APPROVAL AND DATES 1/19/62 - Chg. gr. ident. RP - 256985

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	M/721	M/722	M/722-.222 M/725 - .222	M/40X	725 (Long)	725 (Short)
Ream Holes, opposite side									
1800	5"	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		Slip Bushings (2)		52945U	52945U	52945U	52945U	52945U	52945U
		2-Spdle Multiple Head (29B-200/A-2875)		Std.	Std.	Std.	Std.	Std.	Std.
		Plug Gage		B-800029	B-800029	B-800029	B-800029	B-800029	B-800029
		Position Gage		D-51256	D-51256	D-51256	D-51256	D-51256	D-51256
		Plug Gage (Use with D-51256)		A-51262	A-51262	A-51262	A-51262	A-51262	A-51262
		Plug Gage		B-52944	B-52944	B-52944	B-52944	B-52944	B-52944
		Reamer		A-54148	A-54148	A-54148	A-54148	A-54148	A-54148
		Model 700 ADL		26575	26576	26577			
		700 ADL		26578	26579	26580			
		NOTE: #1 & #2 spindles Hydraulic and #3 spindle hand feed							

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. ADL 700 - 700 ADL 721-722-40X - 725 OPER. No. 60
TYPE #1 LMS 12" Leland-Gifford 3 spindle Press MACH. HRS. MACHINE DEPT. No. 54 [redacted] PAGE 2 OF 2

RD 6463

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126545
R2527533
BARBER - PRESALE R 0126545

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126546
BARBER - PRESALE R 0126546 R2527534

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC -249742 - 8/18/61 - Add 700 - 700 ADL - Payne - 256441
10/30/57 - Addd M/725 - ZK -252593 1/22/62 - Chg. grade ident. - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
2/26/59 - Add reading - Hunt - 253624
7/5/71 - Chg. dept. # - M&S - 256316

TOOLS. GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725 - 222	M/40X	725 (Long)	725 (Short)
SPEED 65 FEED 2 1/8 Form cutter		B-50498	B-50498	B-50498	B-50498	B-50498	B-50498
2 fixtures (R & L Hand)		E-50479	E-50479	E-50479	E-50479	E-50479	E-50479
Cam Roller		A-50856	A-50856	A-50856	A-50856	A-50856	A-50856
Arbor (CMM-2TA-45M 551127-1)		C-52930	C-52930	C-52930	C-52930	C-52930	C-52930
Cycle Selector		D-51798	D-51798	D-51798	D-51798	D-51798	D-51798
Dial Base (Contour & Pos.)		D-50301	D-50301	D-50301	D-50301	D-50301	D-50301
Length Gage		B-80020R	B-80020Q	B-80020Q	B-80020Q	B-80020R	B-80020Q
NOTE:USE THE FOLLOWING EQUIPMENT FOR M/700 & 700 ADL - Pt. No's					ADL		
12" Mill File Model -700 ADL		26575	26576	26577			
700 ADL		26578	26579	26580			
Form Cutter		B-84230	B-84230	B-84230			
Length Gage		B-80020R	B-80020Q	B-80020Q			
Gage							
OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	19767	23755	23756
Finish mill Tang, and burr tang.							
	OCC. No.	21	21	21	21		
	STD. HRS/C	1.800	1.800	1.800	1.800		
	STD. No.	14095	14095	14095	14095		
	EFF. DATE	10/31/49	10/31/49	10/31/49	8/7/55		

ADL
700 - 700 ADL

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. 721-722-40X - 725 OPER. No. 64
TYPE 2/24 Cincinnati R&S Miller MACH. HRS DEPT. No. 54 PAGE 1 OF 1

RD-6481

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCES[S] RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - 256441
1/22/62 - Chg. grade ident. - Payne - 256985

TOOLS. GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.zzz M/725 - .222	M/40X	725 (Long)	725 (Short)
SPEED 330 FEED 2 3/16 End Mill		A-53186	A-53186	A-53186	A-53186	A-53186	A-53186
Fixture		E-50565	E-50565	E-50565	E-50565	E-50565	E-50565
Weldon Holder (BN-5)		B-90053C	B-90053C	B-90053C	B-90053C	B-90053C	B-90053C
Cycle Selector		B-51797	B-51797	B-51797	B-51797	B-51797	B-51797
Plug Gage (.509-.499)		B-50446	B-50446	B-50446	B-50446	B-50446	B-50446
Snap Ga. (Position)		B-50406W	B-50406V	B-50406V	B-50406V	B-50406W	B-50406V
OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	19767a	23755	23756
Mill Bolt Handle clearance, left side, and burr.	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
	OCC. No.	21	21	21	21		
	STD. HRS/C	.810	.810	.810	.810		
	STD. No.	E-78	E-78	E-78	E-78		
	EFF. DATE	10/20/47	10/20/47	10/20/47	3/7/55		

ADL
700 - 700 ADL

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. 721-722 -40X -725 OPER. No. 84
TYPE O-8 Cincinnati R&F Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126547
BARBER - PRESALE R 0126547 R2527535

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126548
R2527536

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -

6/20/55 - Added template - ZK - 250129
10/30/57 - Added M/725 - ZK - 252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
1/13/61 - Chg. cutter - ECR - 255723
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade ident. - Payne - 2569 85

APPROVAL AND DATES

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	M/721	M/722	M/722-.222	M/40X	725 (Long)	725 (Short)
190	2 3/16	Cutter		B-80895	B-80895	B-80895	B-80895	B-80895	B-80895
		Fixture (L.H. Conv. Mill)		E-50525V	E-50525V	E-50525V	E-50525V	E-50525V	E-50525V
		Arbor (#40-1B-10-3)		B-90057V	B-90057V	B-90057V	B-90057V	B-90057V	B-90057V
		Cycle Selector		D-51790	D-51790	D-51790	D-51790	D-51790	D-51790
		Plug (.480-.470" Width)		B-80006T	B-80006T	B-80006T	B-80006T	B-80006T	B-80006T
		Dial (.358-.348")		D-50455	D-50455	D-50455	D-50455	D-50455	D-50455
		Snap (Position)		B-50410W	B-50410V	B-50410V	B-50410V	B-50410V	B-50410V
		Template		B-54981	B-54981	B-54981	B-54981	B-54981	B-54981
		NOTE: Use following feeler gages for Set-up with indicated cutter ranges:							
		.062 - 2.624-2.618							
		.067" 2.616-2.608							
		.072" 2.606-2.598							
		.077" 2.596-2.588							
		.082 2.586-2.580							

OPERATION DESCRIPTION	PART No.						
		20181	20182	18680 16849	19767	23755	23756
Finish mill Bolt Handle slot	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
	OCC. No.	21	21	21	21		
	STD. HRS/C	.808	.808	.808	.808		
	STD. No.	E-75	E-75	E-75	E-75		
	EFF. DATE	10/29/47	10/20/47	10/20/47	3/7/55		

ADL
700 - 700 ADL - 725

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 721-722-40X OPER. No. 88

TYPE 0-8 Cincinnati R&F Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126548

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742
10/30/57 - Added M/725 - ZK - 252593 - 1/29/62 - Chg. grade ident. - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES					
SPEED	FEED			M/721	M/722	M/722-.222 M/725-.222	M/40X	725 (Long)	725 (Short)
1120	1 3/8"	"T" Cutter		A-54083	A-54083	A-54083	A-54083	A-54083	A-54083
		Fixture		E-50554	E-50554	E-50554	E-50554	E-50554	E-50554
		Weldon Holder (BN-2		B-90053W	B-90053W	B-90053W	B-90053W	B-90053W	B-90053W
		Cycle Selector		D-51799	D-51799	D-51799	D-51799	D-51799	D-51799
		Plug Gage		B-80004V	B-80004V	B-80004V	B-80004V	B-80004V	B-80004V
		Dial Base Gage		D-65609W	D-65609W	D-65609W	D-65609W	D-65609W	D-65609W
		Depth .455-.450							
		Central ℄ .0025"							

OPERATION DESCRIPTION	PART No.						
		20181	20182	18680 16849	19767	23755	23756
Mill Firing Pin Head clearance slot	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
	OCC. No.	21	21	21	21		
	STD. HRS/C	.788	.788	.788	.788		
	STD. No.	E-94	E-94	E-94	E-94		
	EFF. DATE	10/27/47	10/27/47	10/27/47	3/7/55		
					AM. 700 - 700 ADL		

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 721-722-40X - 725 OPER. No. 90
TYPE 0-8 Cincinnati R&F Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126549 R2527537
BARBER - PRESALE R 0126549

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126550

PROCESS ..ECORDS

DATES AND REASONS FOR REVISIONS 3/4/55 - Revised process - EJC - 249742 -
4/1/55 - Remove gage - M/40X - ZK - 249804 - 8/18/61 - Add M/700 - 700 ADL - Payne - 256441
10/30/57 - Added M/725 ZK - 252593 - 1/22/62 - Chg. grade ident. - Payne - 256985
4/29/58 - Added 725 - 222 -ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES					
SPEED	FEED			M/721	M/722	M/722-.222 M/725 - .222	M/40X	725 (Long)	M/725 (Short)
		Reamer & c'sink (.700-.699)		C-53144	C-53144	C-53144	C-53144	C-53144	C-53144
		8" file		Std.	Std.	Std.	Std.	Std.	Std.
		Flush Pin (.025-.020")		B-54030	B-54030	B-54030	[illegible]	B-54039	B-54030
		(Depth of c'sink)							

OPERATION DESCRIPTION							
	PART No.	20181	20182	18680 16849	19767	23755	23756
Hand ream to burr Bolt hole & Fire Control slots, and c'sink Barrel end of Bolt hole. Burr file Bolt stop slot for location on #98. Burr rear end of Bolt slot.	M/700 ADL	26575	26576	26577			
	M/700 ~~ADL~~	26578	26579	26580			
	OEC. No.	55	55	55	55		
	STD. HRS/C	1.343	1.343	1.343	1.343		
	STD. No.	E-159	E-159	E-159	E-159		
	EFF. DATE	9/27/50	9/27/50	9/27/50	3/7/55		

ADL
700 - 700 ~~ADL~~

PART NAME Receiver COOLANT SET UP TIME MODEL No. 721-722 -40X -725 OPER. No. 92
TYPE Bench MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

R2527538

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126551
R2527539

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/1/61 - Retyped from 2/8/61
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add note - Payne - 256441
10/6/61 - Transfer equipment to oper. 148 - Chg. read. - Payne - 256659
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT		GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222	M/40X	M/725 (Long)	M/725 (Short)
SPEED	FEED							
2724	Hand	#38 Drill	Std.	Std.	Std.	Std.	Std.	Std.
		Jig	D-51765	D-51765	D-51765	D-51765	D-51765	D-51765
		Jacob's Chuck (#32)	B-90085V	B-90085V	B-90085V	B-90085V	B-90085V	B-90085V
		Collar		D-51783W	D-51783W	D-51783W		D-51783W
		Plug Ga. (.104-.100)	B-80001R	B-80001R	B-80001R	B-80001R	B-80001R	B-80001R
		Depth Ga. (.030-.020)	D-51783	D-51783	D-51783	D-51783	D-51783	D-51783
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

OPERATION DESCRIPTION	PART NO.						
		20181	20182	18680 16849	19787	23755	23756
Drill Bolt Stop Spring hole ~~and Sear cross Firing control holes.~~ Omit on M/700 ~~ADL~~ & 700 ADL . (See Oper. 95 for these models.)							

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No 721-722-40X-725 OPER. No 96
TYPE MACHINE Allen Drill Press DEPT No 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126551

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

8/18/61 - New operation - Payne - 256441
10/6/61 - Transfer equipment to 148 - Payne - 256659
12/6/61 - Chg. gage - Payne - 256862
1/22/62 - Chg. grade ident. - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES		
SPEED / FEED				
Jig	D-84262	D-84262	D-84262	
Buttmill	A-84255	A-84255	A-84255	
~~Snap Gage~~	~~B-84268~~	~~B-84268~~	~~B-84268~~	
Dial Gage	D-84837	D-84837	D-84837	
~~Reamer~~	~~A-84226~~	~~A-84226~~	~~A-84226~~	
~~Plug Gage (1.057 & 1.050)~~	~~B-800000~~	~~B-800000~~	~~B-800000~~	

OPERATION DESCRIPTION	PART NO.			
	M/700 ADL	26575	26576	26577
	M/700 BDL	26578	26579	26580

Buttmill Bolt Stop Spring recess ~~enlarge, cross file, counter bore~~.

(M/700 BDL - 700 ADL only)

PART NAME Receiver COOLANT SET UP TIME MODEL No ADL 700-700 BDL OPER No 95

TYPE MACHINE DEPT No 54 PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126552
BARBER - PRESALE R 0126552
R2527540

PROCESS ..ECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252593 - 1/22/62 - Chg. grade ident. - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725 - .222	M/40X	725 (Long)	725 (Short)
Punch		C-53745	C-53745	C-53745	C-53745	C-53745	C-53745
Punch & Die set		D-50426	D-50426	D-50426	D-50426	D-50426	D-50426
Position Gage		D-51667	D-51667	D-51667	D-51667	D-51667	D-51667

OPERATION DESCRIPTION	PART No.						
		20181	20182	18680 16849	19767	23755	23756
Punch end of Bolt Stop slot	M/700 ADL	26575	26576	26577			
	M/700 BDL	26578	26579	26580			
	OCC. No.	6	6	6	6		
	STD. HRS/C	.422	.422	.422	.422		
	STD. No.	E-157	E-157	E-157	E-157		
	EFF. DATE	2/23/48	2/23/48	2/23/48	3/7/55		

ADL
700 - 700 BDL

PART NAME Receiver COOLANT SET UP TIME MODEL No. 721 - 722-40X -725 OPER. No. 104
TYPE Dennison Hydraulic Press MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126553
R2527541
BARBER - PRESALE R 0126553

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126554
BARBER - PRESALE R 0126554
R2527542

40

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EKC - 249742 -
8/17/55 - Chg. operation number - ZK - 250346
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES
SPEED FEED		
#15 (.180") Drill	Std.	
Jig	D-74624	
Spec. Plug Ga. "A" .179"-.183" "B" - .084-.074"	A-74616	

OPERATION DESCRIPTION		
	PART No.	19767
Drill to depth filler spring hole (40X only)		
	OCC. No.	19
	STD. HRS/C	.815
	STD. No.	Est.
	EFF. DATE	3/7/55

PART NAME Receiver COOLANT Sol. Oil SET UP TIME MODEL No. 40X OPER. No. 106

TYPE 1 spdle. drill press MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126554

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126555 R2527543

BARBER - PRESALE R 0126555

PROCES RECORDS

DATES AND REASONS FOR REVISIONS 9/19/61 - Retyped from 8/18/61
1/22/62 - Chg. grade ident. - Payne - 256985

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222	M/40X	725 (Long)	725 (Short)
1295	4	(4) 9/32" R.H. double end end mills		Std.	Std.	Std.	Std.	Std.	Std.
		(4) Fixtures plus sub-base and template support		E-51498	E-51498	E-51498	E-51498	E-51498	E-51498
		Tracer finger set		B-51513	B-51513	B-51513	B-51513	B-51513	B-51513
		Template		B-51521	B-51521	B-51521	B-51521	B-51521	B-51521
		(4) Weldon Holders (BN-2)		B-90053W	B-90053W	B-90053W	B-90053W	B-90053W	B-90053W
		Plug Gage (.417-.410)		B-80006AA	B-80006AA	B-80006AA	B-80006AA	B-80006AA	B-80006AA
		Position Gage		B-50313W	B-50313V	B-50313V	B-50313V	B-50313W	B-50313V

OPERATION DESCRIPTION	PART NO.						
		20181	20182	18680 16849	19767	23755	23756
	M700 ABL	26575	26576	26577			
	M700 BDL	26578	26579	26580			
Profile Fire Control Safety slot							
OMIT THIS OPERATION ON RECEICERS TO BE TAKEN FOR M/411							

ABL

PART NAME Receiver COOLANT Shell Oil #327 SET UP TIME MODEL No 700-700 BDL-721-722-40X-725 OPER No 107

TYPE MACHINE Cincinnati 4 spindle/360° Profiler DEPT No 54 PAGE 1 OF 1

BD 6461

PROCESS RECORD SKETCH SHEET

Recess depth must be in gage at points indicated.

MODEL 721-722-725 OPER. No. 110
PART NAME Receiver
Details for use of Barrel Gage

DATES AND REASONS FOR REVISIONS
7/5/61 - Orig. Dept. 4
8/18/61 - Added 700 - 700 ADL - 256441
1/22/62 -

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126557
BARBER - PRESALE R 0126557 R2527545

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised sheets - EJC - 249742
10/30/57 - Added M/725 - ZK - 252593
1/22/62 - Chg. grade - Payne - 256985
[illegible] - Added 725 - .222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - 256441 - Payne -

TOOLS. GAGES AND EQUIPMENT SPEED FEED	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725 - .222	725 (Long)	725 (Short)
945 Gravity Double End Mill		A-53188	A-53188	A-53188	A-53188	A-53188
Weldon Holder		B-90053U	B-90053U	B-90053U	B-90053U	B-90053U
Fixture		E-50544	E-50544	E-50544	E-50544	E-50544
Master Receiver		A-51665	A-51665	A-51665	A-51665	A-51665
Dial Base Gage		D-51651	D-51651	D-51651	D-51651	D-51651
(Pos. & centrality)						

a.) For Position: Set dial to zero in master.
Control to: .000" - .007"

b.) For Centrality: Swing Locator 90° in both directions from middel position. Max. difference in dial readings: .008"

NOTE: Cut must be smooth & free of chatter marks.

OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	23755	23756
Buttmill Feed ramp	M/700 ADL	26575	26576	26577		
	M/700 EDL	26578	26579	26580		
(M/721,722,721-.222 only) 725 -725 - .222 (M/700 ADL - 700 EDL)	OCC. No.	21	21	21		
	STD. HRS/C	.837	.837	.837		
	STD. No.	E-92	E-92	E-92		
	EFF. DATE	10/27/47	10/27/47	10/27/47		

ADL 700 - 700 EDL 721 - 722 -725

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. OPER. No. 108

TYPE 0/8 Vertical Cincinnati Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126558

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/1/61 - Retyped from 8/31/60
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
10/11/61 - Chg. gage. Nos. - Payne - 256670
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT			APPROVAL AND DATES				
SPEED	FEED	GA OR CAL	M/721	M/722	M/722-.222 M/725-222	M/725(Long)	M/725(Short)
1295	4"	(4) 13/32" Double End right Hand end mills.	Std.	Std.	Std.	Std.	Std.
		(4) Fixtures plus sub-base and template support	E-51498	E-51498	E-51498	E-51498	E-51498
		Tracer finger set	B-51514	B-51514	B-51514	B-51514	B-51514
		Template	E-51498W	E-51498V	E-51498V	E-51498W	E-51498V
		(4) Weldon Holder	B-900538	B-900538	B-900538		
	*	Plug Gage (Width)	C-50792W	C-50792V	C-50792V	C-50772W	C-50792V
		Plug Gage (Length)	C-54525W	C-54525V	C-54525V	C-54525W	C-54525V
		Base Gage (Concentricity) (.008" Max. Diff.)	D-50716	D-50716	D-50716	D-50716	D-50716
		Base Ga. (Depth) (See sketch	D-84543	D-84543	D-84543	D-84543	D-84543
	**	Base Ga. (Position)	D-50221	D-50221	D-50221	D-50221	D-50221

* Go Must Go; No Go must not go at front or rear.
** Gage from highest point in pad.

OPERATION DESCRIPTION	PART NO.	20181	20182	18680 16849	23755	23756
Profile Magazine recess and burr.	700 ADL	26575	26576	26577		
	700 ADL	26578	26579	26580		
Gage 1 pc. every cycle						

PART NAME Receiver COOLANT Shell Oil #327 SET UP TIME MODEL NO M/721-722-725 OPER NO 110
TYPE MACHINE Cincinnati 4 spindle 360° Profiler DEPT NO 54 PAGE 1 OF 1

ADL
700 - 700 ADL

RD-6461

BARBER - PRESALE R 0126558
R527546

PROCESS RECO. J SKETCH SHEET

DATES AND REASONS FOR REVISIONS

7/5/61 - Chg. Dept. # - Was # 256315

8/10/61 - Add W/700 - 700 ADL - Was # 256315

1/22/62 - Chg. Part Name

MODEL 721 722 -700-700 ADL ORDER No. 112

PART NAME Receiver Bolt Release Latch

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126560

54

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

3/14/55 - Revised - EJC - 249742 -
6/24/57 - Remove 222 Hunt - 252307
10/30/57 - Added 725 - ZK - 252593
11/20/58 - Add note on finish - Hunt - 253472
3/13/59 - Change cutter - Hunt - 253724 -
1/12/61 - Added note - ECR-255716
7/5/61 - Chg. dept. # - MBS - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222	725 - (Long)	725 (Short)
SPEED	FEED							
1300	5½"	[redacted] End Mill		[redacted]	[redacted]	A-54048	[redacted]	[redacted]
		Fixture		D-54039	D-54039	D-54039	D-54039	D-54039
		3/8" Weldon Holder		Std.	Std.	Std.	Std.	Std.
	*	Template Gage		B-54047	B-54047	B-54047	B-54047	B-54047
	*	See sketch						
		NOTE: Cut must be smooth and free of chatter marks.						

OPERATION DESCRIPTION	PART No.	20181	20182	[redacted]	23755	23756
	M/700 ADL	26575	26576			
Mill 30° bevel on bottom of rails.	700 BDL	26578	26579			
(M/721,722, [redacted])	OCC. No.	21	21	21		
725 - 700 ADL - 700 BDL	STD. HRS/C	1.401	1.401	1.401		
(OMIT ON 222 Cal. - See Oper. 113)	STD. No.	E-130	E-130	E-130		
	EFF. DATE	1/19/48	1/19/48	1/19/48		

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. 721-722 -725-700-700 ADL OPER. No. 112

TYPE 0/8 Vertical Cincinnati Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126560 R2527548

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126561
BARBER - PRESALE R 0126561 R2527549

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/24/57 - New operation - Hunt - 252307
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441 -
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES
SPEED / FEED	222	M/725 - 222
Double end mill	A-54048	A-54048
Tool Holder	Std.	Std.
Fixture	E-51498	E-51498
Former	E-51498V with cams for 13° runout	E-51498V with cams for 13° runout.
Templet Ga. - Depth	B-54047	B-54047
Templet Ga. - Length	B-81836	B-81836
Templet Ga. - Length	B-54210	B-54210
OPERATION DESCRIPTION / PART No	18680	16849
	M/700ADL 26577	
Profile 30° bevel	M/700ADL 26580	
(222 Cal. only)		
OCC No		
STD. HRS/C		
STD No		
EFF DATE		

ADL

PART NAME Receiver COOLANT SET UP TIME MODEL No 700- 722-725 -700ADL OPER No 113
TYPE Cinn. 360° Auto Profiler Mach. #12470 MACH HRS DEPT No 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126562
BARBER - PRESALE R 0126562 R527550

PROCES_ RECORDS

DATES AND REASONS FOR REVISIONS 11/26/57 - New operation - 252628 - ZK -
1/27/57 - Add reading to equipment - 252703
1/23/58 - Add cutter note - Hunt - 252773 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - A Chg. reading - Payne - 256441 -
10/11/61 - Correct gage No. - Payne - 256670

APPROVAL AND DATES

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL	725 (Long)	725 (Short)	M/725 - 222	
	D.3	end Mill - 5/16 dia. *		MC-9-Std.	MC-9 Std.	MC-9-Std. *	Undersize 13/32 end mills from operation 110 may be used. Max. dia. allowable is .370 A-83591
		Stub arbor		Std.	Std.	Std.	
		Fixture		D-82299	D-82299	D-82299	
		Base Ga.		D-82314	D-82314	D-82314	
		"A" Dim.		455-445	455-445	.455-.445	
		"B" Dim.		7.608-7.598	6.768-6.758	6.768-6.758	
		Template (Max. runout)		B-82353	B-72353	B-72353	
		"C" [redacted] - Dim.		.0014	7.164	7.164	
		Plug Ga.		B-80245	B-80245	B-80245	
		"D" .407 - .400					
		OPERATION DESCRIPTION	PART No	23755	23756	16849	
		Safety					
		Mill B[redacted] clearance slot.					
		M/725 only)					
			OCC No.				
			STD. HRS/C				
			STD No.				
			EFF. DATE				

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 114
TYPE #0-8 Cinn. Vert. Miller MACH HRS DEPT. No 54 [redacted] PAGE 1 OF 1

RD 8461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126563 R2527551

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

11/26/57 - New operation - 252628 - ZK -
12/27/57 - Add reading to equipment - 252703
1/23/58 - Add cutter note - Hunt - 252773 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Chg. reading - Payne - 256441 -
10/11/61 - Correct gage No. - Payne - 256670
2/9/62 - Remove - Payne - 257092 -

APPROVAL AND DATES

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL.	725 (Long)	725 (Short)	M/725 - 222	
	D.E.	End Mill - 5/16 dia. *		MC-9-Std.	MC-9 Std.	MC-9-Std. *	Undersize 13/32 end mills from operation 110 may be used. Max. dia. allowable is .370 A-83591
		Stub arbor		Std.	Std.	Std.	
		Fixture		D-82299	D-82299	D-82299	
		Base Ga.		D-82314	D-82314	D-82314	
		"A" Dim.		455-445	455-445	.455-.445	
		"B" Dim.		7.608-7.598	6.768-6.758	6.768-6.758	
		Template (Max. runout)		B-82353	B-72353	B-72353	
		"C" [redacted] - Dim.		.0.014	7.164	7.164	
		Plug Ga. "D" .407 - .400		B-80245	B-80245	B-80245	

OPERATION DESCRIPTION	PART No.			
		23755	23756	16841
Safety Mill B[redacted] clearance slot.				
M/725 only)				
	OCC No			
	STD HRS/C			
	STD No.			
	EFF DATE			

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 114

TYPE #0-8 Cinn. Vert. Miller MACH HRS DEPT No 54[redacted] PAGE 1 OF 1

ED 6461

BARBER - PRESALE R 0126563

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252503 -
4/[illegible]/59 - Added 725 - .222 - ZK - 253021
7/5/61 - Chg. dept. # - MS - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES					
SPEED FEED		M/721	M/722	M/722-.222 M/725 - .222	M/40X	725 (Long)	725 (Short)
1200 Hand Norton Grinding Wheel Wheel: 20" x 9" x 12" Recess: 1 side 14" x 1" 1 side 14" x 2" (57A4665VBE)		Spec. Type 7	Spec. Type 7	Spec. Type 7	Spec. Type 7	Spec. Type 7	Spec. Type 7
Reg. -- Norton Reg. Wheel Wheel: 12" x 8" x5" Recess: 1 side 7⅛ x 2⅛ 1 side 7⅛ x 1½ (A 801-ROR 30)		Std. Type 7	Std. Type 7	Std. Type 7	Std. Type 7	Std. Type 7	Std. Type7
1-9" Work Rest		Std.	Std.	Std.	Std.	Std.	Std.
1-Carbide Blade		Std.	Std.	Std.	Std.	Std.	Std.
1 Snap (1.359-1.357)		B-80012M	B-80012M	B-80012M	B-80012M	B-80012M	B-80012M
OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	19767	23755	23756
Centerless grind (infeed)	M/700 ADL	26575	26576	26577			
	M/700 DL	26578	26579	26580			
	OCC. No.	56	56	56	56		
	STD. HRS/C	1.328	1.328	1.328	1.328		
	STD. No.	13745	13745	13745	13745		
	EFF. DATE	4/18/49	4/18/49	4/18/49	3/7/55		
					ADL 700 - 700 DL		

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 721-722-40X -725 OPER. No. 116
TYPE #12 Landis C'less Grinder MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126564
R2527552
BARBER - PRESALE R 0126564

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126565 R527553

BARBER - PRESALE R 0126565

PROCES. RECORDS

DATES AND REASONS FOR REVISIONS 10/17/61 - Chg. operation 135 to 118 - Payne - 256686

12/21/61 - Chg. cutter - Payne - 256902

1/22/62 - Chg. grade - Payne - 256985

APPROVAL AND DATES

TOOLS GAGES AND EQUIPMENT	GA OR CAL
Fixture	D-84583
Cutter	A-84838
Gage	D-84584

SPEED | FEED

OPERATION DESCRIPTION	PART NO.			
	M/700 ADL	26575	26576	26577
	M/700 ADL	26578	26579	26580

Mill Safety clearance

(M/700 ADL - 700 ADL only)

PART NAME Receiver COOLANT SET UP TIME MODEL No ADL 700 - 700 ADL OPER No 118

TYPE MACHINE DEPT No 54 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126566 R2527554

BARBER - PRESALE R 0126566

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252593 - 1/22/62 - Chg. grade - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
6/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Added 700 - 700 ADL - Payne - 256441

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725 - 222	M/40X	725 (Long)	725 (Short)
SPEED	FEED								
116	1 3/4	Form cutter		B-54566	B-54566	B-54566	B-54566	B-54566	B-54566
		2 Fixtures (R&L Hand)		E-50505	E-50505	E-50505	E-50505	E-50505	E-50505
		Cam Roller		A-50856	A-50856	A-50856	A-50856	A-50856	A-50856
		Arbor (#50-1½-B-18-4)		B-90057W	B-90057W	B-90057W	B-90057W	B-90057W	B-90057W
		Cycle Selector		D-51798	D-51798	D-51798	D-51798	D-51798	D-51798
		Dial Gage		D-51326	D-51326	D-51326	D-51326	D-51326	D-51326
		Master Roll		A-51340	A-51340	A-51340	A-51340	A-51340	A-51340

OPERATION DESCRIPTION	PART No.	M/721	M/722	M/722-.222	M/40X	725 (Long)	725 (Short)
		20181	20182	18680 16849	19767	23755	23756
Mill top radius for scope mount	700 ADL	26575	26576	26577			
	700 ADL	26578	26579	26580			
	OCC. No.	21	21	21	21		
	STD. HRS/C	1.343	1.343	1.343	1.343		
	STD. No.	13274	13274	13274	13274		
	EFF. DATE	8/30/48	8/30/48	8/30/48	3/7/55		

PART NAME Receiver COOLANT Sol.Oil SET UP TIME MODEL No. 721-722-40X ADL 700 - 700 ADL -725 OPER. No. 120
TYPE 2/24 Cincinnati R&F Miller MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126567
BARBER - PRESALE R 0126567 R2527555

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

2/26/59 - Was operation 136 - Hunt - 253624
7/31/59 - C-83025 was C-51725
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

SPEED	FEED	TOOLS GAGES AND EQUIPMENT / OPERATION DESCRIPTION	GA OR CAL / PART NO.	APPROVAL AND DATES M/721	M/722	M/722-.222	M/40X
		#2 Friction Tapping Attach		Std.	Std.	Std.	Std.
		Tapping Fixture		~~C-85035~~ 53035	~~C-85035~~	~~C-85035~~	C-84723
		Tap Front and Rear Guard Screw Holes:					
560	Hand	1/4-28 N.F. Tap PG #1		B-90059T	B-90059T	B-90059T	B-90059T
		Thread Plug Gage		B-80032P	B-80032P	B-80032P	B-80032P
		Tap Middle Guard Screw Hole:					
560	Hand	#8-36 NF2 Tap P.G. #1		B-90059S	B-90059S	B-90059S	B-90059S
		Thread Plug Gage		B-80032W	B-80032W	B-80032W	B-80032W
			PART NO.	20181	20182	18680	19767
			M/700 ADL	26575	26576	26577	
			M/700 ADL	26578	26579	26580	
		Tap 3 Guard Screw holes.					
		M/721 - 722-40X -700 ADL & 700 ADL)					

ADL
700 - 700 ADL

PART NAME Receiver COOLANT Lard Oil SET UP TIME MODEL No 721-722-40X OPER No 124

TYPE Allen Drill Press MACHINE DEPT No 54 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126568
R2527556

BARBER - PRESALE R 0126568

PROCES[S] RECORDS

DATES AND REASONS FOR REVISIONS 6/29/61 - Retyped - vellum missing - Chg. dept. # - M&S

TOOLS GAGES AND EQUIPMENT			GA. OR CAL.	APPROVAL AND DATES					
SPEED	FEED			725 (Long)	725 (Short)	M/725-222			
		#2 Friction Tapping Attach.		Std.	Std.	C-83085			
560	Hand	1/4-28 N.F. Tap PG #1		B-90059T	B-90059T	B-90059T			
		Thread Plug Ga.		B-80032P	B-80032P	B-80032P			
OPERATION DESCRIPTION			PART NO.	23755	23756	16849			
Tap (2) Guard Screw holes (M/725 only)									

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 126

TYPE Allen Drill Press MACHINE DEPT No 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126568

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126569
R2527557

PROC S RECORDS

DATES AND REASONS FOR REVISIONS 6/29/61 - Retyped - vellum missing - Chg. dept. # - M&S
2/9/62 - Obsolete- Payne - 2 57092

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL.	APPROVAL AND DATES 725 (Long)	725 (Short)	M/725-222
		#2 Friction Tapping Attach.		Std.	Std.	C-83085
560	Hand	1/4-28 N.F. Tap PG #1		B-90059T	B-90059T	B-90059T
		Thread Plug Ga.		B-80032P	B-80032P	B-80032P

Obsolete

OPERATION DESCRIPTION	PART NO.	725 (Long) 23755	725 (Short) 23756	M/725-222 16849
Tap (2) Guard Screw holes (M/725 only)				

PART NAME Receiver COOLANT SET UP TIME MODEL No. 725 OPER. No. 126
TYPE Allen Drill Press MACHINE DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126569

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126570-R2527558

PROCESS ..ECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252593 - 8/18/61 - Added 700 - 700 ADL - Payne - 256441
12/4/57 - Chg. B/M number - Hunt - 252655 1/22/62 - Chg. grade - Payne - 256985
2/26/59 - Add instructions on position of cut - Hunt - 253660
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	725 (Long)	725 (Short)
SPEED / FEED					
Hand Buttmill (1/2")		A-[illegible]03	[illegible]03	[illegible]03	[illegible]03
Fixture		D-54226	D-54226	D-54226	D-54226

Blend with right side of spline broach cut. Flush to .010" undercut.
Runout to rear is 5/32" from rear of Ejection Port.

OPERATION DESCRIPTION	PART No.	20181	20182	23755	23756
	M/700 ADL	26575	26576		
Buttmill Shell clearance	M/700 ADL	26578	26579		
	OCC. No.	19	19		
	STD. HRS/C	.5[illegible]	.5[illegible]		
(M/721 - #20181 & M/722-#20182	STD. No.	15[illegible]00	15[illegible]00		
[illegible]	EFF. DATE	7/21/52	7/21/52		
725 -700 & 700 ADL					
(OMIT ON 222 and 222 Mag. Cals.)					

PART NAME Receiver COOLANT Sol.011 SET UP TIME MODEL No. ADL [illegible] 700 - 700 721-722 -725 OPER. No. 128
TYPE Drill Press MACH. HRS. DEPT. No. 54 [illegible] PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126570

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126571
BARBER - PRESALE R 0126571
R2527559

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC - 249742 -
10/31/57 - Added M/725 - ZK - 252593 - 1/22/62 - Chg. grade - Payne - 256985
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - MAS - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441 -

TOOLS. GAGES AND EQUIPMENT			APPROVAL AND DATES					
SPEED	FEED	GA. OR CAL.	M/721	M/722	M/722-.222 M/725 - .222	M/40X	725 (Long)	725 (Short)
420	L.S.	#6-48 Tap PG #1	B-90059U	B-90059U	B-90059U	B-90059U	B-90059U	B-90059U
		Tapping Fixture	C-52194	C-52194	C-52194	C-52194	B-52194	B-52194
		Thread Plug Ga.	B-80031N	B-80031N	B-80031N	B-80031N	B-80031N	B-80031N
OPERATION DESCRIPTION		PART No.	20181	20182	18680 16849	19767	23755	23756
Tap 6 scope screw holes.		700ADL	26575	26576	26577			
		700 DL	26578	26579	26580			
		OCC. No.	19	19	19	[illegible]		
		STD. HRS/C	1.789	1.789	1.789	[illegible]		
		STD. No.	13560	13560	13560	[illegible]		
		EFF. DATE	1/17/49	1/17/49	1/17/49	[illegible]		
						[illegible]		
						[illegible]		

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126572 R 527560

BARBER - PRESALE R 0126572

64

PROCE RECORDS

DATES AND REASONS FOR REVISIONS 1/6/58 - New - Hunt - 252714
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - MS - 256316

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 725 (Long)	725 (Short)	M/725 - 222			
SPEED / FEED							
Stamp		B-82174W	B-82174W	B-82174W			
Adaptor		B-82174V	B-82174V	B-82174V			
Fixture		D-82170	D-82170	D-82170			
Sight Gage (Position)		B-82177	B-82177	B-82177			

OPERATION DESCRIPTION	PART No.	23755	23756	16849			
Stamp - "S" & "F"							
(M/725 only)							
	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						

PART NAME Receiver COOLANT SET UP TIME MODEL No. 725 OPER. No. 139
TYPE Air-Hydraulics Press - 6 Ton MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126573 R2527561

BARBER - PRESALE R 0126573

6M

PROCE. , RECORDS

DATES AND REASONS FOR REVISIONS 1/6/58 - New - Hunt - 252714
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - MHS - 256316
2/9/62 - Obsolete - Payne - 257092

SPEED	FEED	TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 725 (Long)	725 (Short)	M/725 - 222
		Stamp		B-82174W	B-82174W	B-82174W
		Adaptor		B-82174V	B-82174V	B-82174V
		Fixture		D-82170	D-82170	D-82170
		Sight Gage (Position)		B-82177	B-82177	B-82177

OPERATION DESCRIPTION				
	PART No.	23755	23756	16848
Stamp - "S" & "F"				
(M/725 only)				
	OCC. No.			
	STD. HRS/C			
	STD No.			
	EFF. DATE			

PART NAME Receiver COOLANT SET UP TIME MODEL No. 725 OPER No. 139
TYPE Air-Hydraulics Press - 6 Ton MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

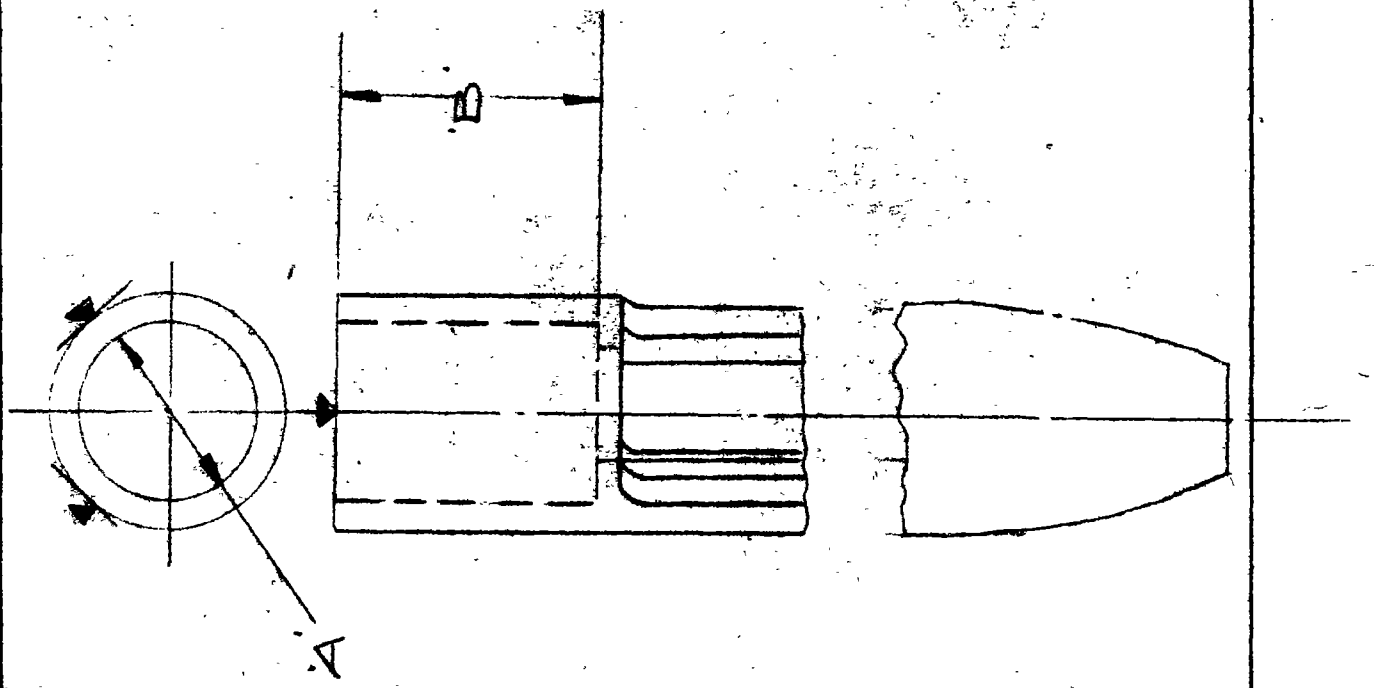
RD-6461

TPR-7

M/721

PART: RECEIVER M/40-X	PART No. 19769
OPERATION: FINISH C'BORE BBL. HOLE TO DEPTH	OPER. No.: ~~122~~ 139-1 DEPT. [redacted] 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. # - M&S - 256316
11/3/59 - Chg. oper. 150 to 139-1 - 254347-Hunt -
1/11/55 - Chg. Op #-250745 JSJ.
3/14/55 - Revised process - EJC - 249742 -

COMPILED BY:	APPROVAL & DATE:
K-1-22-54	K

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126575
R2527563

BARBER - PRESALE R 0126575

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 11/3/59 - Retyped - was operation 150 - Hunt - 254347
7/5/61 - Chg. dept. # - M&S - 256316

SPEED	FEED	TOOLS GAGES AND EQUIPMENT	GA OR CAL	40X
		C'bore (S.J. Style B **		B-82728
	*	Rotary Stop		C-82727
		Holding Fixture		D-73767
		Plug Gage "A" 1.003 - .998		B-802158
		Flush Pin Gage "B" 1.505 - 1.500		C-73768
	*	Hand feed to stop		

APPROVAL AND DATES

** Rotary Stop D-73769)
C'bore A-54716) To be used until supply
Pilot A-73932) of A-54716 is exhausted.

OPERATION DESCRIPTION	PART NO.	19767
Finish c'bore Barrel hole to depth. (40X only)		

PART NAME Receiver COOLANT SET UP TIME MODEL No 40X OPER No 139-1
TYPE MACHINE #3 Allen Drill Press 1-Spindle Drill Press DEPT No 54 PAGE 1 OF 1

RD-6461

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised - EJC - 249742 -
10/30/57 - Added M/725 - ZK - 252593 - 10/11/61 - Chg. TS to Regular No. - Payne - 256670
4/29/58 - Added 725 - 222 - ZK - 253021 1/22/62 - Chg. Grade - Payne - 256985 -
7/5/61 - Chg. dept. # -M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES					
SPEED / FEED		M/721	M/722	M/722-.222 M/725 - 222	M/40X	725 (Long)	725 (Short)
#6 Cutting	Set of 3 broaches	D-53962	D-53962	D-53962	D-53962	D-53962	D-53962
(20FPM)	Triple Fixture	D-54493	D-54493	D-54493	D-73762	D-54493	D-54493
#5 Return	Broach Puller	C-50189	C-50189	C-50189	C-50189	C-50189	C-50189
(90FPM)	Pull Pin	A-54548	A-54548	A-54548	A-54548	A-54548	A-54548
	Fed. Dial (1.004-.998)	B-80066W	B-80066W	B-80066W	B-80066W	B-80066W	B-80066W
	Setting Ring	B-80064W	B-80064W	B-80064W	B-80064W	B-80064W	B-80064W
	Plug Gage (.452-.459)	A-50249	A-50249	A-50249	A-50249	A-50249	A-50249
	Functional Gage	C-53609	C-53609	C-53609	[illegible]	C-53609	C-53609

OPERATION DESCRIPTION	PART No.						
		20181	20182	18680 16849	19767	23755	23756
Broach Bolt Hole and Guide slots to burr.	700 [illegible]DL	26575	26576	26577			
	700 [illegible]DL	26578	26579	26580			
	OCC. No.	92	92	92	92		
	STD. HRS/C	.474	.474	.474	.474		
	STD. No.	15035	15035	15035	15035		
	EFF. DATE	1/21/52	1/21/52	1/21/52	2/7/55		

MBL
700 - 700 ADL

PART NAME Receiver COOLANT Sun. #623 SET UP TIME 721-722-40X -725 MODEL No. OPER. No. 140
TYPE LaPointe Hydraulic Broach (HP-30) MACH. HRS. DEPT. No. 54[illegible] PAGE 1 OF 1

RD-6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126576 R2527564
BARBER - PRESALE R 0126576

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS
4/7/61 - Retyped from 4/4/61
6/2/61 - Chg. note and add visual inspect - Ranney - 256256
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
9/15/61 - Chg. TS to Reg. No. - Payne - 256580
9/27/61 - Add equipment for M/700-Payne - 256626
10/6/61 - Chg. reading and add equipment - Payne - 256659
1/10/62 - Chg. wording - Payne - 256945
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222	M/40X	725(Long)	725(Short)
SPEED / FEED				M/725-222			
Files, scrapers							
Burring tool					C-54973		
Hand Reamer A-84226		NOTE: Check with diam. Ga. B-800029 when new reamers are put on job.					
Bolt Locking Shoulder - Worst acceptable					10-30-58		
				Rev.7/20/59			
Sample Number		10-24-58 Rev.7/20/59	10-24-58 Rev. 7/20/59	58-48 Burr .025x30° chamfer See Sample Dated Std.	8/58	58-47 Rev. 7/20/59	58-47 Rev.7/20/59
Dental Grinder and Bit Polish Ramp on 222 Cal.							
Scrape locking shoulder [illegible] to smooth finish [illegible] on 40X only					C-84711		
Special Scraper							
Fixture for 1/8 radius on rear of tang 700 ~~BDL~~ 700 ADL							
Sample							
Filing Jig D-84652							
OPERATION DESCRIPTION	PART NO.	20181	20182	18680	19767	23755	23756
	M/700~~ADL~~	26575	26576	26577			
	700 ~~BDL~~ ADL	26578	26579	26580			
File burrs, at Bolt clearance, rear of Trigger slot, and fire control slot. Hand ream Fire Control holes. (To remove burrs) Inspect for visual defects and fit bolt. (File 1/8 radius on rear of tang (M/700 ~~BDL~~ 700 ADL only) (Draw file & polish 30° bevel on bottom of rails except M/40X)				* Must be sharpened in cutter grind to maintain squareness.			

PART NAME Receiver COOLANT SET UP TIME MODEL No ~~BDL~~ 700 - 700 ADL 721 - 722-725-40X OPER No 148

TYPE MACHINE DEPT No 54 ~~30~~ PAGE 1 OF 1

BARBER - PRESALE R 0126577
BARBER - PRESALE R 0126577 R2527565

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126578-R527566

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

3/14/55 - Revised process - EIC - 249742 -
12/12/55 - Chg. 148 to 150
10/30/57 - Added M/725 - ZK -252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
11/3/59 - Was 150 - Hunt - 254347
7/5/61 - Chg. dept. # - MAS - 256316
8/18/61 - Added 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

TOOLS, GAGES AND EQUIPMENT			GA. OR CAL.	M/721	M/722	M/722-.222 M/725 - 222	M/40X	725 (Long)	725 (Short)
SPEED	FEED								
		Plug Ga. (Must Go.)		C-53609	C-53609	C-53609	C-53609	C-53609	C-53609
		Try sample Bolt							
OPERATION DESCRIPTION			PART No.	20181	20182	18680 16849	19767	23755	23756
Product check for missed operations after #148.			M/700 ADL	26575	26576	26577			
			M/700 ADL	26578	26579	26580			
			OCC. No.						
			STD. HRS/C						
			STD. No.						
			EFF. DATE						
							BHL 700 - 700 ADL		

PART NAME Receiver COOLANT SET UP TIME MODEL No. 721-722-40X -725 OPER. No. Prod. Check
TYPE Bench MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126578

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126579

7°.

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742-
10/30/57 - Added M/725 - ZK -252593 1/22/62 - Chg. grade - Payne - 256985
4/29/58 - Added 725 - zzz - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Added 700 - 700 ADL and equipment - Payne - 256441

TOOLS. GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/721	M/722	M/722-.222	M/40X	725 (Long)	725 (Short) 725 - 222
Roll ~~and Insert~~		C-53228W	C-53228V	C-53228V	B-73907	C-53228U	C-53228U
Fixture		D-54349	D-54349	D-54349	D-54349	D-54349	D-54349
Sight Gage (Position)		C-52914W	C-52914V	C-52914V	C-52914V	C-52914W	C-52914V
		NOTE: USE ROLL NUMBER C-53228T ON ALL MODEL 700 & 700 ADL RECEIVERS.					

OPERATION DESCRIPTION	PART No.						
Roll mark "Remington" and Model Number.		20181	20182	18680	19767	23755	23756 16849
	M/700 ADL.	26575	26576	26577			
	M/700 ADL.	26578	26579	26580			
	OCC. No.	40	40	40	40		
	STD. HRS/C	.300	.300	.300	.300		
	STD. No.	12855	12855	12855	12855		
	EFF. DATE	3/1/48	3/1/48	3/1/48	3/7/55		

ADL
700 - 700 ADL

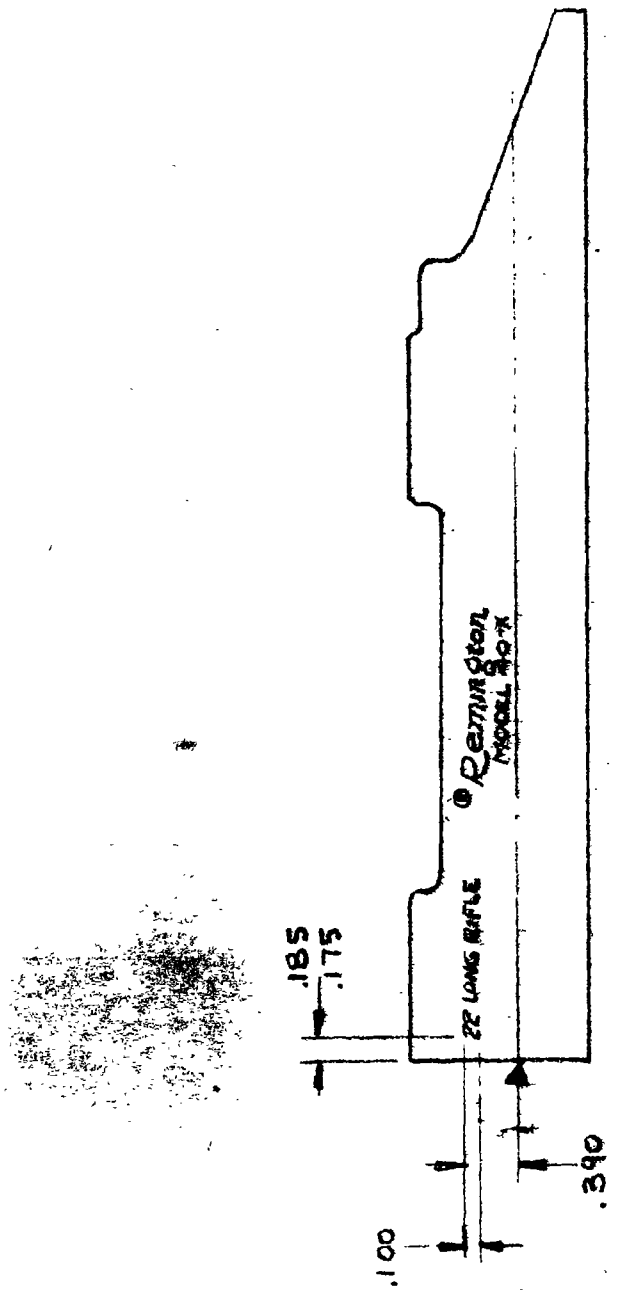
PART NAME Receiver COOLANT SET UP TIME MODEL No. 721-722-40X -725 OPER. No. 156
TYPE G.Schmidt Roll Marking Machine MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6461

BARBER - PRESALE R 0126579 R2527567

PART: RECEIVER M/40-X	PART No. 19767
OPERATION: ROLL MARK '22 LONG RIFLE'	OPER. No.: 160 DEPT. [redacted] 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. # - MHS - 256316
3/14/55 - Revised process - EJC - 249742 -

COMPILED BY:	APPROVAL & DATE:
K-12-22-54	K

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126581 R2527569

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 3/1[illegible]/55 - Revised process - ZK - EJC - 249742 -
4/24/58 - Add USMC - Special - Hunt - 253009
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES: 40X	USMC-40X	40X US			
SPEED / FEED							
Marking Roll		A-73906	A-82431	A-84105			
Fixture		D-54733	D-54733	D-54733			
Template		A-73902	A-73902	A-73902			

OPERATION DESCRIPTION							
	PART No.	19767	Special	Special			
Roll mark							
22 Long Rifle							
	OCC. NO.	40					
	STD. HRS/C	.300					
	STD. No.	Est.					
	EFF. DATE	3/7/55 -					

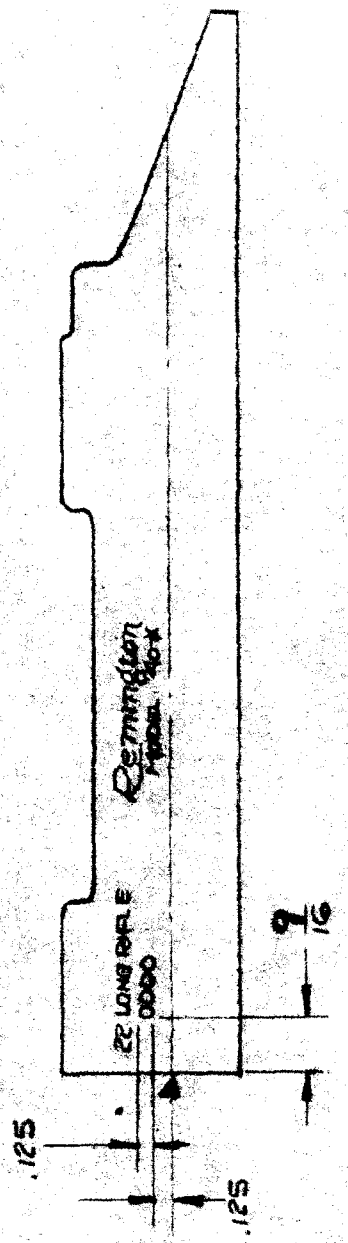
PART NAME Receiver COOLANT SET UP TIME MODEL No. 40X OPER. No. 160
TYPE C.Schmidt Marking Machine MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6481

BARBER - PRESALE R 0126581

PART: RECEIVER M/40-X	PART No. 19767
OPERATION: STAMP SERIAL NO, LEFT SIDE & FRONT	OPER. No.: 164 DEPT- [redacted] 54

PROCESS RECORD — ILLUSTRATION SKETCH



7/5/61 - Chg. dept. # - MRS - 256316
5/9/55 - Chg. 7/16 to 9/16 - 249971 - ZK -
3/14/55 - Revised process - EJC - 249742 -

COMPILED BY:	APPROVAL & DATE:
K-12-22-54	K

REMINGTON ARMS COMPANY, INC., ILION, N. Y.

H. H. SULLIVAN, INC.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126583
R2527571

PROCES_ RECORDS

DATES AND REASONS FOR REVISIONS 3/14/55 - Revised process - EJC - 249742 -
5/9/55 - Added suffix's to template and chg. machine - ZK - 249971
10/30/57 - Added M/725 - ZK - 252593 - 8/18/61 - Add 700 - 700 ADL - Payne - 256441 -
4/28/58 - Added 725 - 222 - ZK - 253021 1/22/62 - Chg. grade - Payne - 256985
7/5/61 - Chg. dept. # - MAS - 256316

TOOLS. GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES M/72	M/722	M/722 - .222 725 - 222	M/40X	M/725(Long)	725 (Short)
SPEED FEED							
Stamping Fixture		C-1-53705	C-1-53705	C-1-53705	C-1-53705	C-53705	C-53705
Template (Position)		A-53706 W	A-53706 W	A-53706 W	A-53706 V	A-53706W	A-53706W
Stamp (Schmidt M/62-Numberhead)		~~Std.~~	~~Std.~~	~~Std.~~	~~Std.~~	~~Std.~~	~~Std.~~
NOTE: Start M/700 & 700 ADL - with serial No. 1002							
OPERATION DESCRIPTION	PART No.	20181	20182	18680 16849	19767	23755	23756
Stamp serial number, left side, front	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
	OCC. No.	40	40	40	40		
	STD. HRS/C	.275	.275	.275	.275		
	STD. No.	12950	12950	12950	12950		
	EFF. DATE	4/12/48	4/12/48	4/12/48	4/12/48		

PART NAME Receiver COOLANT SET UP TIME MODEL No. 700 - 700 ADL 721-722 -40X -725 OPER. No. 164
TYPE ~~Hand Press~~ Schmidt marking machine MACH. HRS. DEPT. No. 54 PAGE 1 OF 1

RD-6481

BARBER - PRESALE R 0126583

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126584

PROCESS RECORD—HEAT TREAT SPECIFICATION

75

MATERIAL AND SPECIFICATION 8640 STD. PRACTICE No.

TEMPERATURE: Ajax high temp: 1525° - 1550°F; ajax low temp: 450°F
Gas Fired Nitre Bath: 750° - 900°F.

MAXIMUM LOAD TIME: 15 minutes total time in each bath.

REMARKS: Place rack in high temp. bath. After 15 min., quickly transfer to quenching bath. After 15 min. in quench bath, transfer to gas-fired nitre bath for an additional 15 min. Remove rack after time has elapsed, and quench in cold water. Remove to cyanide boil for a few min., rinse in alkaline cleaner and hot water, and then spread parts on drier. Blow parts dry with compressed air before placing in trays or rack for lindberg tempering operation. Adjust temperature within this range to obtain desired hardness.

Equipment: Required for Operation #2:

1. Ajax high-temp. salt bath.
2. Ajax low temp. quench bath.
3. Gas-Fired Nitre Bath.
4. Cold water rinse tank.
5. Hot water rinse tank.
6. Cyanide rinse tank.
7. Alkaline cleaner tank.
8. Steam drier.
9. Racks with hooks.

HEAT TREAT INSPECTION

HARDNESS LIMITS Rc 37 to 44.

APPEARANCE OF PARTS: After treatment, parts should have a uniform temper color and be free of salt or alkaline residue.

OPERATION DESCRIPTION: Austemper

DATES AND REASONS FOR REVISIONS 10/21/58 - Retyped from 4/29/58
8/18/61 - Add M/700 - 700 ADL - Payne - 256441 [illegible]/62 - Chg. grade - Payne - 256935
8/21/61 - Chg #'s on 700 a[illegible] APPROVAL AND DATES [illegible] 7-5- [illegible]

CA. OR CAL.	M/721	M/722	M/722-.222	M/725-(Long)	725 (Short)	725-.222
PART No.	20181	20182	18680	23755	23756	16849
OCC. No.						
STD. HRS/C						
STD. No.						
EFF. DATE						
OF STD. OF STD.						
M/700 ADL	26575	26576	26577			
M/700 [illegible]DL	26578	26579	26580			

[illegible] 700 - 700 ADL

PART NAME Receiver EQUIPMENT See above MODEL No. 721-722-725 OPER. 168

DEPT. No. 51 PAGE 1 OF 1

RD-6484

BARBER - PRESALE R 0126584 R2527572

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126585

PROCESS RECORD – HEAT TREAT SPECIFICATION

MATERIAL AND SPECIFICATION: 137K 8640

STD. PRACTICE No.: #203

TEMPERATURE: 800° - 825°F

MAXIMUM LOAD: Basket capacity

TIME: 30 minutes

QUENCH: Water

REMARKS:

INSPECT FOR: Rockwell Hardness

HEAT TREAT INSPECTION

STANDARD PRACTICE No.: 164

HARDNESS LIMITS: Rc - 37/44

APPEARANCE OF PARTS: Steel gray color, clean

OPERATION DESCRIPTION: Lindberg Draw

DATES AND REASONS FOR REVISIONS: 5/5/59 - Retyped from 4/29/59
8/18/61 - Add 700 - 700 ADL - Payne - 256441 1/22/62 - Chg. grade -XP - 256985
8/21/61 - Chg. #16949

APPROVAL AND DATES

GA. OR CAL.	M/721	M/722	M/722 - .222	[illegible]	725 (Long)	725 (Short)
PART No.	20181	20182	18680	16849	23755	23756
OCC. No.						
STD. HRS/C						
STD. No.						
EFF. DATE						
OF STD.						
M/700 ADL	26575	26576	26577			
M/700 ADL	26578	26579	26580	[illegible]		

700-700 ADL [illegible]

PART NAME: Receiver EQUIPMENT: Lindberg El. Furnace #14 MODEL No: 721 -722-725 OPER: 172

DEPT. No: 51 PAGE: 1 OF: 1

RD-6464

BARBER - PRESALE R 0126585 R2527573

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126586

PROCESS RECORD – HEAT TREAT SPECIFICATION

79

MATERIAL AND SPECIFICATION: 4137

STD. PRACTICE No.

TEMPERATURE: 1550°F

MAXIMUM LOAD

TIME: 15 minutes @ temperature

QUENCH: Oil

REMARKS: Wash and Dry

INSPECT FOR

HEAT TREAT INSPECTION

STANDARD PRACTICE No.

HARDNESS LIMITS

APPEARANCE OF PARTS: Clean and dry - free from salt or alkaline residue.

OPERATION DESCRIPTION	DATES AND REASONS FOR REVISIONS: 7/23/57 - Add operation 174 - WH - KRC - 252416						
	APPROVAL AND DATES						
Neutral Salt Harden	GA. OR CAL.						
	PART No.	19767					
	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						
	OF STD. OF STD.						

PART NAME: Receiver EQUIPMENT: Ajax hi-temp. furnace MODEL No. 40X OPER. 174

DEPT. No. 51 PAGE 1 OF 1

RD-6484

BARBER - PRESALE R 0126586
R2527574

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126587

PROCESS RECORD – HEA TREAT SPECIFICATION

MATERIAL AND SPECIFICATION 4137

STD. PRACTICE No.

TEMPERATURE 400°F

MAXIMUM LOAD

TIME

QUENCH Air Cool

REMARKS

INSPECT FOR Rockwell Hardness

HEAT TREAT INSPECTION

STANDARD PRACTICE No. 164

HARDNESS LIMITS Re 50-54

APPEARANCE OF PARTS Clean, free from salt

OPERATION DESCRIPTION	DATES AND REASONS FOR REVISIONS 7/23/57 - Added operation WH- KRC - 252416
Lindberg Draw	APPROVAL AND DATES

GA. OR CAL.						
PART No.	19767					
OCC. No.						
STD. HRS/C						
STD. No.						
EFF. DATE OF STD.						

PART NAME Receiver EQUIPMENT Lindberg Temper Furnace MODEL No. 40X OPER. 176-178

DEPT. No. 51 PAGE 1 OF 1

RD 6464

BARBER - PRESALE R 0126587 R2527575

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126588

PROCESS RECORD—HE TREAT SPECIFICATION

77

MATERIAL AND SPECIFICATION

STD. PRACTICE No.

TEMPERATURE 1050 - 1100

MAXIMUM LOAD

TIME

QUENCH

REMARKS Front end to Rc 45 Max.

INSPECT FOR

HEAT TREAT INSPECTION

STANDARD PRACTICE No.

HARDNESS LIMITS

APPEARANCE OF PARTS

OPERATION DESCRIPTION	DATES AND REASONS FOR REVISIONS 10/1/58 - Chadwick - 253355
String Draw front end.	APPROVAL AND DATES

GA. OR CAL.						
PART No.	19767					
OCC. No.						
STD. HRS/C						
STD. No.						
EFF. DATE						
OF STD. OF STD.						

PART NAME Receiver EQUIPMENT Surface C. Salt Bath MODEL No. 40X OPER. 179

DEPT. No. 51 PAGE 1 OF 1

RD-6464

BARBER - PRESALE R 0126588
R2527576

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126589

PROCESS RECORD – HEAT TREAT SPECIFICATION

MATERIAL AND SPECIFICATION

STD. PRACTICE No.

TEMPERATURE

MAXIMUM LOAD

TIME

QUENCH

REMARKS 16 hours Minimum in Boiling Cyanide Solution

INSPECT FOR

HEAT TREAT INSPECTION

STANDARD PRACTICE No.

HARDNESS LIMITS

APPEARANCE OF PARTS

OPERATION DESCRIPTION	DATES AND REASONS FOR REVISIONS 10/1/58 - New - Chadwick - 253355
Cyanide Deplate to remove stains	APPROVAL AND DATES

GA. OR CAL.						
PART No.	19767					
OCC. No.						
STD. HRS/C						
STD. No.						
EFF. DATE OF STD.						

PART NAME Receiver EQUIPMENT MODEL No. 40X OPER. 179-2

DEPT. No. 51 PAGE 1 OF 1

RD. 6464

BARBER - PRESALE R 0126589 R 2527577

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126590
R2527578

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 6/28/60 - Added operation - ECR - 255085
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add 700 - 700 ADL - Payne - 256441
9/15/61 - Add gage - Payne - 256580
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GR OR CAL	APPROVAL AND DATES					
SPEED FEED							
USE Master Bolt - B-54523W for the following Part Nos. #20181,23755,26575 & 26578		[redacted]	[redacted]	[redacted]			
USE Master Bolt - B-54523T for Part No.s - #20182,23756, #16849,18680,26576,26577, #26579 & 26580.							
Plug Gage B-82781 FOR M/40X - Use M/40X 130LT							

OPERATION DESCRIPTION	PART NO.						
	M/721	20181					
	722	20182	18680 (.222)				
	725	23755 (Long)	23756(Short)	16849 (.222)			
	40X	19767					
File to fit Bolt and plug gage.	M/700ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			

PART NAME Receiver COOLANT SET UP TIME MODEL No 721,722,725,40X ADL 700 - 700 ADL OPER. No 183R
TYPE MACHINE DEPT No 54 PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126590

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126591

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS
6/2/61 - Added operation - ECR - 256256
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-222 M/725-222	M/40X	725 (Long)	725 (Short)
SPEED / FEED							
Polishing Head		Std.	Std.	Std.	Std.	Std.	Std.

OPERATION DESCRIPTION	PART NO.	20181	20182	18680	19767	23755	23756
	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
Polish bolt hole to remove visual defects.							

PART NAME Receiver COOLANT SET UP TIME MODEL No 721-722-725-40X -700-700ADL OPER. No 184R
TYPE MACHINE DEPT No 54 PAGE 1 OF 1

RD-6461

R2527579

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126592
R2527580

PROCES RECORDS ,

·DATES AND REASONS FOR REVISIONS
6/2/61 - Added operation - ECR - 256256
7/5/61 - Chg. dept. # - M&S - 256316
8/17/61 - Add 700 & 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

APPROVAL AND DATES

TOOLS GAGES AND EQUIPMENT	GA OR CAL	M/721	M/722	M/722-.222 M/725-222	M/40X	725(Long)	725 (Short)
SPEED / FEED							
Safer edge mill file		Std.	Std.	Std.	Std.	Std.	Std.

OPERATION DESCRIPTION	PART NO.	20181	20182	18680	19767	23755	23756
	M/700 ADL	26575	26576	26577			
	M/700 ADL	26578	26579	26580			
Draw file rails to remove visual defects.							
					MDL. 700 & 700 ADL		

PART NAME Receiver COOLANT SET UP TIME MODEL No. 721 - 722 - 40X - 725 OPER. No. 185R

TYPE MACHINE DEPT No. 54 PAGE 1 OF 1

RD-8461

BARBER - PRESALE R 0126592

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126593
R 527581

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

5/16/56 - New operation - Moyer - 251296
10/30/57 - Added note - ZK - 252593
12/19/57 - Remove reading on op. - Add 725 to model - ERCarr -252676
4/29/58 - Added 725 - 222 - ZK - 253021
4/4/61 - New method - Moyer - 255951
7/5/61 - Chg. dept. # - M & S - 256316
8/17/61 - Add M/700 - 700 ADL - Payne - 256441
9/6/61 - Reinstate step #3 for M/40X - Payne - 256550
1/16/62 - Chg. grade & remove step #3 - HP - 256985

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	40X	721	722	722-.222 725-222	725 (Long)	725 (Short)
SPEED / FEED		APPROVAL AND DATES					
Step #1 - Finish polish front face of Ejection Port				Wheel compressed leather medium Soft Density 1" x 14" formed side. hill set-up #180 grit oil Lubricant: Lard oil 4 parts and kerosene oil 1 part mixed.			
Step #2 [illegible] polish top of right Ejection Port rails and inn side of left Ejection Port rail.				Medium soft density set-up felt wheel 2" x 4" -1/4" arbor hole #180 grit dry.			
Step #3 [redacted]				[redacted]			
Step #4 (a) Finish polish top of left Ejection Port rail.				Wheel compressed leather medium soft density 2" x 14" set up #180 grit oil. Lubricant - same as Step #1			
(b) Chamfer rear end of bridge.							
(c) Chamfer top of step rear end of bridge.							
(d) Polish top of rear tang - Note: First 5 Receivers off new wheel repolish.							
OPERATION DESCRIPTION	PART No.	19767	20181	20182	18680 16849	23755	23756
[illegible] and chamfer [illegible], finish polish [illegible]	M/700 ADL	26575	26576	26577			
[redacted]	M/700 DL	26578	26579	26580			
	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						

PART NAME Receiver COOLANT SET UP TIME MODEL No. 40X-721-722 - 725 OPER. No. 255

TYPE Rifle MACH. HRS. DEPT. No. 54 PAGE 1 OF 2

Polishing Dept.

BD-6481

BARBER - PRESALE R 0126593

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126594
R2527582

BARBER - PRESALE R 0126594

PROCES RECORD

DATES AN REASONS FOR REVISIONS

5/16/56 - Change method - Moyer - 251296
12/19/57 - Add 725 - ERCarr - 252676
10/25/61 - Remove step 6 - M/40X - Payne - 256697
4/4/61 - Remove Step #6 - Moyer - 255951
1/22/62 - Chg. grade - Payne - 256985 -
7/5/61 - Chg. dept. # - M&S - 256316
8/17/61 - Add 700 - 700 ADL - Payne - 256441

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	SPEED	FEED		APPROVAL AND DATES
				Step #5. Finish polish radius 2 sides to blend over top front end and bridge on top rear end. NOTE: First 5 Receivers off new belt - repolish.	Contact wheel compressed leather Medium soft density 4" x 14" Lightning metalite cloth abrasive belt Durabonded N.T.S 4" x 168" #180 grit oil Lubricant : same as step #1
				[redacted]	

BSL
700-700ADL - 40X

PART NAME Receiver COOLANT SET UP TIME MODEL No. 40X, 721, 722 -725 OPER. NO 186
TYPE Rifle MACH. HRS DEPT. No. [redacted] 54 PAGE 2 OF 2
MACHINE Polishing Jack

RD-6283

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 4/4/61 - New method - WH- ERC - Moyer - 255951
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
9/6/61 - Remove M/40X - Payne - 256550
10/25/61 - Reinstate M/40X - Payne - 256697
1/22/62 - Chg. grade - Payne - 256985

APPROVAL AND DATES

TOOLS, GAGES AND EQUIPMENT	GA OR CAL	721	722	722-222	40X	725(Long)	725 (Short)
SPEED / FEED							
OPERATION DESCRIPTION	PART NO.	20181	20182	18680	[redacted]	23755	23756
	M/700ADL	26575	26576	26577	19767		
	M /700[redacted]DL	26578	26579	26580			
				M/725-222			
				16849			
Vibrator Finish							
([redacted]r)							

[redacted]DL
700 - 700 ADL

PART NAME Receiver COOLANT SET UP TIME MODEL No. 721-722-[redacted]-725-40X OPER No. 188-1

TYPE MACHINE Lorco Vibrator DEPT No. 70 PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126595
BARBER - PRESALE R 0126595 R2527583

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126596

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

4/4/61 - New method - W.Moyer - 255951
8/18/61 - Add M/700 - 700 ADL - Payne - 256441
9/6/61 - Remove 40X - Payne - 256550
10/25/61 - Reinstate M/40X - Payne - 256697
1/22/62 - Chg. grade - Payne - 256985

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES 721	722	722-222	[redacted]	725 (long)	725 (Short)
SPEED / FEED							
OPERATION DESCRIPTION	PART NO.	20181	20182	18680	[redacted] 19767	23755	23756
				725 - 222 16849			
	M/700 ADL	26575	26576	26577			
Remove chips that have lodged in Receiver.	M/700 [redacted]DL	26578	26579	26580			
([redacted])							

PART NAME Receiver — COOLANT — SET UP TIME — MODEL No [redacted]DL 700 - 700 ADL -40X 721-722-[redacted]-725 — OPER No 188-2

TYPE — MACHINE — DEPT No 70 — PAGE 1 OF 1

BARBER - PRESALE R 0126596 R2527584

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126597

PROCES_ RECORDS

DATES AND REASONS FOR REVISIONS 10/30/57 - Added operation - ERCarr - 252593 -
4/29/58 - Added 725 - 222 - ZK -253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add note - Payne - 256441

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES 725 Long	725 Short	725. - 222				
SPEED / FEED								
OPERATION DESCRIPTION	PART No.	23755	23756	16849				
Coarse Blast Exterior (M/725 only)								
	OCC No							
	STD. HRS/C							
	STD. No.							
	EFF. DATE							

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 189
TYPE Semi-Automatic Pressure Blast MACH HRS DEPT No 54 PAGE 1 OF 1

RD 6481

BARBER - PRESALE R 0126597 R2527585

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126598

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS
10/30/57 - Added operation - ERCarr - 252593 -
4/29/58 - Added 725 - 222 - ZK -253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add note - Payne - 256441
2/9/62 - Obsolete - Payne - 257092 -

TOOLS GAGES AND EQUIPMENT	GA OR CAL.	APPROVAL AND DATES 725 Long	725 Short	725 - 222
SPEED / FEED				
OPERATION DESCRIPTION	PART No	23755	23756	18649
Coarse Blast Exterior (M/725 only)	OCC No.			
	STD HRS/C			
	STD. No			
	EFF DATE			

Obsolete

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 189
TYPE Semi-Automatic Pressure Blast MACH. HRS DEPT No 354 PAGE 1 OF 1

RD 6461

R527586

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 10/30/57 - Added operation - ERCarr - 252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add note - Payne - 256441
2/9/62 - Remove 721,722,725 - Payne- 257092 -

TOOLS, GAGES AND EQUIPMENT	GA. OR CAL.	APPROVAL AND DATES		
SPEED / FEED		725 (Long)	725 (Short)	725 - 222
OPERATION DESCRIPTION	PART No.	23755	23756	16859
Fire Blast Exterior (M/725 only)	OCC No.			
	STD. HRS/C			
	STD No.			
	EFF. DATE			

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 193
TYPE Semi-Automatic Pressure Blast MACH HRS. DEPT. No 54 [redacted] PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126599
BARBER - PRESALE R 0126599 R2527587

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126600

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 9/6/61 - Reinstated for M/40X only) - Payne - 256550
10/25/61 - Remove op. from process - Payne - 256697

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES
SPEED / FEED	40X	
Step #1	File to break inside edges of right Ejection Port rail, inside edges of rear tang.	6" Mill bastard file 6" #2-1/2 round file.
	Sample Dated 7/20/59	

OPERATION DESCRIPTION	PART NO
File to break edges (M/40X only)	19767

PART NAME Receiver
TYPE Rifle
COOLANT
SET UP TIME
MACHINE
MODEL No 40X
DEPT No 54
OPER No 192
PAGE 1 OF 1

BARBER - PRESALE R 0126600
R2527588

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126601 R2527589

BARBER - PRESALE R 0126601

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 10/30/57 - Added operation - EKCarr - 252593 -
4/29/58 - Added 725 - 222 - ZK - 253021
7/5/61 - Chg. dept. # - M&S - 256316
8/18/61 - Add note - Payne - 256441

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES 725 (Long)	725 (Short)	725 - 222			
SPEED / FEED							
OPERATION DESCRIPTION	PART No	23755	23756	16849			
Fire Blast Exterior (M/725 only)							
	OCC No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						

PART NAME Receiver COOLANT SET UP TIME MODEL No 725 OPER No 193
TYPE Semi-Automatic Pressure Blast MACH. HRS. DEPT. No 54 [redacted] PAGE 1 OF 1

RD 6441

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126602
R527590

BARBER - PRESALE R 0126602

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 8/18/61 - Added 700ADL - Payne - 256441 -
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	SPEED	FEED	GA OR CAL	APPROVAL AND DATES
OPERATION DESCRIPTION	PART NO	26578	26579	26580
ADL Grit Blas - 700 ADL only				

PART NAME Receiver COOLANT SET UP TIME MODEL No ADL 700 OPER No 194

TYPE MACHINE DEPT No 54 PAGE 1 OF 1

AD 8461

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS
9/6/61 - Reinstated for M/40X only_ Payne - 256550
10/25/61 - Obsolete - Payne- 256697

APPROVAL AND DATES

TOOLS GAGES AND EQUIPMENT	GA OR CAL	40X
SPEED / FEED		
Step #1	(a) Wire brush Ejection Port inside crosswise. (b) Wire brush Bolt Handle slot. (c) Wire brush rear tang crosswise. (d) Turn Receiver wire brush Ejection Port inside crosswise. (e) Wire brush rear tang crosswise. (f) Proceed to wire brush all polished area including chamfered edges of rear tang lengthwise.	

NOTE: Oil spray - Steel guard #1301
NOTE: Receivers to Assembly area - Dept. 56.

Sample Date and Number - 5/14/56 - #5616

OPERATION DESCRIPTION	PART NO	19767
Wire brush (M/40X only)		

PART NAME Receiver COOLANT SET UP TIME MODEL No 40X OPER No 196
TYPE Rifle MACHINE Polishing Jack DEPT No 54 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126603 R2527591
BARBER - PRESALE R 0126603

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126604
R2527592

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS 8/18/61 - Added 700 - 700 ADL - Payne - 256441
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	SPEED	FEED	APPROVAL AND DATES
Vise - Std.				
Tap - 1 1/16 NC - 16-3				
Tap Wrench - Std.				

OPERATION DESCRIPTION	PART NO.	721	722	722-222	725(Long)	725 (Short)	725-222
		20181	20182	18680	23755	23756	16849
	M/700 ADL	26575	26576	26577			
	M/700 BDL	26578	26579	26580			
Hand tap Barrel hole.							

PART NAME Receiver COOLANT SET UP TIME MODEL No 700-700ADL-721-722-725 OPER No 195
TYPE MACHINE DEPT No 58 PAGE 1 OF 1

RD 6461

BARBER - PRESALE R 0126604

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

PROCES RECORDS

DATES AND REASONS FOR REVISIONS 9/19/61 - Retyped from 9/15/61 ~~Rev'd~~ - REMOVE M/721 722 725 - 4 12
10/11/61 - Add note and gages - Payne - 256670
1/22/62 - Chg. grade - Payne - 256985

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/~~721~~ Feeland	M/~~722~~ Feeshort	M/~~722~~ Feed -.222 ~~M/725-222~~	M/40X	M/725(Long)	725 (short)
SPEED FEED							
Cupped Wheel		Std.	Std.	Std.	Std.	Std.	Std.
* Grinding Fixture		B-84137	B-84137	B-84137	B-84137	B-84137	B-84137
Plug Gage		B-82781	B-82781	B-82781	B-82781	B-82781	B-82781
Remove approximately 80% of the machined surface by grinding.							
Use Magnetic Dial with gage		D-71154	D-71154	D-71154	D-71154	D-71154	D-71154

NOTE: Using above gages - T.I.R. must not exceed .010 at rear of Receiver (Check 3 consecutive Receivers. To check squareness: every 30 pieces.)

1. Assemble Receiver to master Barrel. Tighten with wrench. Use new Barrel Bracket with each Receiver assembled.
2. Place on bench centers locating in muzzle and Bolt hole.
3. Runout from left to right side at front of Receiver not to exceed .003 T.I.R. Check 3 consecutive pieces.
4. Master Barrel selected for zero runout at muzzle on Gg. D-82264.

Changed to 200

OPERATION DESCRIPTION	PART NO	~~20181~~	~~20182~~	~~18680~~ 16849	19767	~~23755~~	~~23756~~
Grind front face square, and sort with master bolt and plug gage to segregate receivers requiring fitting, polishing or draw filing.	M/700ADL	26575	26576	26577			
	M/700~~BDL~~	26578	26579	26580			

* Locate bottom of Receiver in Vee Block

BDL
700-700ADL - ~~721 - 722~~

PART NAME Receiver COOLANT SET UP TIME MODEL No 40X-~~725~~ OPER No 182
TYPE MACHINE Surface Grinder DEPT No 54 PAGE 1 OF 1

RD 8461

BARBER - PRESALE R 0126605
R2527593
BARBER - PRESALE R 0126605

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126606
R2527594

BARBER - PRESALE R 0126606

PROCESS RECORDS

Payne

DATES AND REASONS FOR REVISIONS 2/5/62 - Was operation 182 - Payne - 257039

TOOLS GAGES AND EQUIPMENT	SPEED	FEED	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725-.YYY	M/40X	M/725 (Long)	725 (Short)
Cupped Wheel				Std.	Std.	Std.	Std.	Std.	Std.
Grinding Fixture		*		B-84137	B-84137	B-84137	B-84137	B-84137	B-84137
Plug Gage				B-82781	B-82781	B-82781	B-82781	B-82781	B-82781
Remove approximately 80% of the machined surface by grinding.									
NOTE: Using above gages - T.I.R. must not exceed .010 at rear of Receiver (Check 3 consecutive Receivers every 30 pieces.)									

OPERATION DESCRIPTION	PART NO.	20181	20182	18680 16849	19767	23755	23756
	M/700ADL	26575	26576	26577			
Grind front face square, and sort with master bolt and plug gage to segregate receivers requiring fitting, polishing or draw filing. All rejects to be returned to Dept. 54.	M/700BDL	26578	26579	26580			
				* Locate bottom of Receiver in Vee Block			

PART NAME Receiver COOLANT SET UP TIME MODEL No. 700BDL-700ADL-721-722-40X-725 OPER. No 200

TYPE MACHINE Surface Grinder DEPT No 58 PAGE 1 OF 1

RD 6461

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126607
BARBER - PRESALE R 0126607 R2527595

PROCES[illegible] RECORDS

DATES AND REASONS FOR REVISIONS
9/19/61 - Retyped from 9/15/61
10/11/61 - Add note and gages - Payne - 256670
1/22/62 - Chg. grade - Payne - 256985
2/5/62 - Obsolete - Payne - 257039

TOOLS GAGES AND EQUIPMENT	GA OR CAL	APPROVAL AND DATES M/721	M/722	M/722-.222 M/725-222	M/40X	M/725(Long)	725 (short)
SPEED / FEED							
Cupped Wheel		Std.	Std.	Std.	Std.	Std.	Std.
* Grinding Fixture		B-84137	B-84137	B-84137	B-84137	B-84137	B-84137
Plug Gage		B-82781	B-82781	B-82781	B-82781	B-82781	B-82781
Remove approximately 80% of the machined surface by grinding.							
Use Magnetic Dial with gage		D-71154	D-71154	D-71154	D-71154	D-71154	D-71154

NOTE: Using above gages - T.I.R. must not exceed .010 at rear of Receiver (Check 3 consecutive Receivers To check squareness: every 30 pieces.)

1. Assemble Receiver to master Barrel. Tighten with wrench. Use new Barrel Bracket with each Receiver assembled.
2. Place on bench centers locating in muzzle and Bolt hole.
3. Runout from left to right side at front of Receiver not to exceed .003 T.I.R. Check 3 consecutive pieces.
4. Master Barrel selected for zero runout at muzzle end Op. [illegible]

Changed to OP200

OPERATION DESCRIPTION	PART NO	20181	20182	18680 16849	19767	23755	23756
Grind front face square, and sort with master bolt and plug gage to segregate receivers requiring fitting, polishing or draw filing.	M/700ADL	26575	26576	26577			
	M/700BDL	26578	26579	26580			

* Locate bottom of Receiver in Vee Block

BDL
700-700ADL - 721 - 722-

PART NAME Receiver | SET UP TIME | COOLANT | MODEL No 40X-725 | OPER No 182
TYPE | MACHINE Surface Grinder | DEPT No 54 | PAGE 1 OF 1

PL 548

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 0126608
BARBER - PRESALE R 0126608
R527596

12/20/60 - Retyped from 11/23/60 -
4/12/61 - Add equipment and pt. nos. - Payne - 256025

	30-06	35 Rem.	270 Win.	308 Win.	280 Rem.
FIXTURE	E-85356	E-85356	E-85356	E-85356	E-85356
~~Drill Jig~~ COLLET	~~D-82239~~ 1-E-939	~~D-82239~~ 1-E-939	~~D-82239~~ 1-E-939	~~D-82239~~ 1-E-939	~~D-82239~~ 1-E-939
Special Drill	A-82158	A-82158	A-82158	A-82158	A-82158
Tap - 6-48 NS-2	B-90187J	B-90187J	B-90187J	B-90187J	B-90187J
VEE BLOCK ~~Plug Ga. for drill~~ FOR M/742 REG	B-85356-D			B-85356-D	B-85356-D
PLUG GA Hole dia. and depth	B-80240R	B-80240R	B-80240R	B-80240R	B-80240R
Thread Plug Ga. dia. & depth	B-80246	B-80246	B-80246	B-80246	B-80246
Pinning Ga.	B-82254	B-82254	B-82254	B-82254	B-82254
Base Ga. - Radial location	E-83826	E-83826	E-83826	E-83826	E-83826
Ga. for span of holes (Carbine)	B-84109	B-84109	B-84109	B-84109	B-84109
Pos. Ga. Carbine	B-84110	B-84110	B-84110	B-84110	B-84110
Pos. Ga. Reg. Length	B-84111	B-84111	B-84111	B-84111	B-84111
Base Ga.	D-82451	D-82451	D-82451	D-82451	D-82451
Dial	D-82705W	D-82705W	D-82705W	D-82705W	D-82705W
Pin Block	D-82451P	D-82451P	D-82451P	D-82451P	D-82451P
Loc. Block BOTH Reg. Length S E-85356 A	~~A-82451A~~	~~A-82451A~~ E-85356 A	~~A-82451A~~ E-85356 A	~~A-82451A~~ E-85356 A	A-82451A E-85356 A
VEE ~~Loc.~~ Block Carbine AND M/760 REG	~~D-82451F~~	~~D-82451F~~	~~D-82451F~~	~~D-82451F~~	~~D-82451F~~ E85356-C
END MILL	A-54453	A-54453	A-54453	A-54453	A-54453
DOVETAIL CUTTER	27-E-354	27-E-354	27-E-354	27-E-354	27-E-354
PLUG WIDTH & ANGLE OF DOVETAIL	B-72553	B-72553	B-72553	B-72553	B-72553
TEMPLATE-POS. OF F. DOVETAIL SLOT	C-69325	C-69325	C-69325	C-69325	C-69325
" " OF S. SLOT	C-83709	C-83709	C-83709	C-83709	C-83709
FLOSH PIN GA. FOR DEPTH	A-82130	A-82130	A-82130	A-82130	A-82130
GAGE FOR CUTTER WEAR	A-83901	A-83901	A-83901	A-83901	A-83901
M/740-42	24625			24626	24628
MILL FRONT DOVETAIL SLOT, M/760	24615	24617	24618	24619	24621
M/760C	25915		25917	25918	25916
Drill and top 2 Rear Sight Screw M/742C	26195			26196	26197
holes, AND BURR FRONT DOVETAIL SLOT					

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126609

PROCESS RECORDS

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DATES AND REASONS FOR REVISIONS 11/23/60 - Retyped - Added M/742C - ECR - 255575 3/1/61 COMBINED WITH OP. 121 No.
3/17/61 - Add temp. ga. for carbines - ECR - 255940
4/12/61 - Add ga. and pt. nos. - and remove burr tool - Payne - 256025
8/31/61 - Remove gage - Payne - 256499

TOOLING GAGES AND EQUIPMENT	GA OR CAL.	30-06	35 Rem.	270 Win.	308 Win.	280 Rem.
~~Fixture~~		~~D-64542~~	~~D-64542~~	~~D-64542~~	~~D-64542~~	~~D-64542~~
~~Router~~ - End Mill		~~A-54453~~	~~A-54453~~	~~A-54453~~	~~A-54453~~	~~A-54453~~
Dovetail Cutter		27E-354	27E-354	27E-354	27E-354	27E-354
Plug Width and angle of Dovetail		B-72553	B-72553	B-72553	B-72553	B-72553
Template - Position of front dovetail slot. (Long Bbls.)		C-69325	C-69325	C-69325	C-69325	C-69325
~~Dial Face Ga. for squareness~~		~~D-64542~~	~~D-64542~~	~~D-64542~~	~~D-64542~~	~~D-64542~~
~~Locating Block~~		~~B-68209~~	~~B-68209~~	~~B-68209~~	~~B-68209~~	~~B-68209~~
~~End mill and dovetail cutter~~ 3/8" collet		~~Std.~~	~~Std.~~	~~Std.~~	~~Std.~~	Std.
Chamber ~~plugs~~ for Location		~~D-64542W~~	~~D-64542L~~	~~D-64542W~~	~~D-64542R~~	~~D-64542N~~
~~Burring Tool~~		~~C-75302~~	~~C-75302~~	~~C-75302~~	~~C-75302~~	~~C-75302~~
Last Gage for cutter wear		A-83901	A-83901	A-83901	A-83901	A-83901
Flush Pin Ga. for dept#		A-82130	A-82130	A-82130	A-82130	A-82130
~~Steady Rest Pad~~		~~B-84020~~	~~B-84020~~	~~B-84020~~	~~B-84020~~	~~B-84020~~
Template - Position of front dovetail slot (Carbine Bbl.s)		C-83709		C-83709	C-83709	C-83709
Template - Pos. S. slot-Carbine		C-83709	C-83709	C-83709	C-83709	C-83709

Obsolete

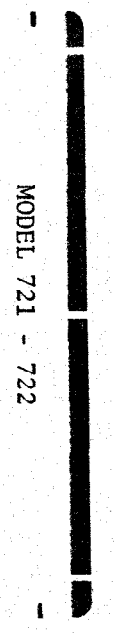
OPERATION DESCRIPTION	PART NO.				
	740-42	24625		24626	24628
	M/760	24615	24617	24618	24619	24621
	M/760C	25915		25917	25918	25916
	M/742C	26195			26196	26197
Mill Front dovetail slot and burr.						

PART NAME Barrel Assembly COOLANT SET UP TIME MODEL No 740 - 760-742 OPER No 112

TYPE MACHINE Special Kingsbury Machine DEPT No 58 PAGE 1 OF 1

RD 8461

BARBER - PRESALE R 0126609
R2527597


MODEL 721 - 722

8/23/60

244 cal. - duplicate -

Model	Est. 1960 sales	Bal. to ship 7/31	what stock 7/31	EXCESS GUNS	EXCESS COMPONENTS: BARRELS				
						Complete			
7xx	500	168	85	0		0			Bbl Blank 400
725	~~xxx~~	94	196	150		3			
740	140	57	940	883	OS NS	250 200			
760	41	0	0	0	~~OS~~ ~~NS~~	~~17~~ 0			

BARBER - PRESALE R 012611

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 012611
R2527599

7/11/60

Determine quantity of 721-722 stocks to run/plan for Sporter introduction

	Total 1959	Est. for 1960	Shipped 6/30/60	Whse stock 6/30/60	Bal. to Produce
30/06	2789	3800	1340	1063	1397
270	1387	1400	555	446	399
300 Mag	528	530	216	226	88
308	474	475	294	280	101
257	215	108	68	4	—
244	705	900	289	117	94
222	1988	1850	1177	355	318
222 Mag	759	820	359	45	116
280	—	600	258	280	38
243	—	1300	481	102	517
Total	10258	11243	5239	3018	3030

7/19/60 - Remington over assembled 222 Mag.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 012661 5
R527603
BARBER - PRESALE R 012661 5

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - PRESALE R 01266 16
R2527604

#3 F'cast. 6/13

1959 - Production vs Schedule

	Schd. Prod. Apr May	Actual Prod.	Diff.		Total 1959	Est. for 1960 ?	Shipped 5/31	Whse Stock 5/31	Bal to Produce	Shipped 6/30					Bal to Ship
30/06	500	811	311		3789	3800	1000	1173	1537	1340	1000				2710
270	300	288	88		1387	1400	451	544	405		8				946
300 Mag	241	324	83		528	530	174	234	122		38				358
308	0	4	4		674	675	252	310	113		0				423
300 Sav															
257		3	3		395	67	67		—						
244	450	179	241		705	500	256	114	130		200				244
22	294	273	(21)		1988	1850	1040	356	454		180 1000 +1				816
22 Mag	280	285	5		459	520	307	101	112		300				213
280	325	255	70		—	600	240	397	37						—
243	600	0	600		—	1300	—	—	1300		700				1300
Total	2920				10258	11000									
						11247	3879	3229	4173						
	2765 Min	2416	349												
	Whse	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	
30/06	300	320 320	415 735	340 1075	750 1825	300 2125	150 2275	77 2352	148 2500	101 2601	100 2701	148 2849	400 3249	850 4099	
270	100	176 276	186 462	238 700	100 800	143 943	78 1021	18 1039	94 1133	40 1173	40 1213	45 1258	250 1508	121 1629	
300 Mag	50	43 93	98 191	73 264	67 331	47 378	11 389	14 403	27 430	16 446	20 466	25 491	90 581	43 624	
308	60	37 97	63 160	119 279	103 382	41 423	40 463	24 487	30 517	30 547	20 567	40 607	130 737	37 774	
244	80	29	47 156	85 241	68 309	46 355	29 384	17 401	50 451	50 501	40 541	40 581	100 681	29 710	
22	100	151 251	208 459	138 597	127 724	114 838	42 880	66 946	166 1112	130 1242	160 1402	160 1562	400 1962	151 2113	
22 Mag	40	51 91	85 176	59 235	43 278	44 322	15 337	11 348	50 398	70 468	60 528	60 588	140 728	51 779	
280	100	37 137	63 200	119 319	103 422	41 463	40 503	24 527	40 567	60 627	40 667	40 707	300 1007	37 1344	
243	150	600 750	156 906	209 1115	134 1249	143 1392	70 1520	22 1542	50 1592	60 1652	140 1792	100 1892	310 2202	120 2322	
Total	980	1000	1200	1200	1400	900	500	300	700	500	800	800	1760	1000	
	Whse Stock					Production			633	867					
30/06	1173	100 1273	200 1573	485 2058	200 2258	365 2623	945 3568	3568	3568	3568	90 3658	900 4558	4458	4458	
270	544	544	544	544	500 1044			1044	1044	1044	1044	1044	1044	1044	
300 Mag	234	234	234	234	200 434	434	434	120 554	80 634	634	634	634	634	634	
308	310	310	310	310	300 610	610	610	610	610	610	450 1060	1060	1060	1060	
244	114		300 414	414	414	414	414	414		350 764	764	764	764	764	
22	356	410 766	200 966	966	966	966	966	966	600	1566	1566	5 1566	698 2264	1000 3264	K
22 Mag	101		250 351	351	351	351	351	351	300	651	651	651	300 951	951	K
280	397	347	347	347	347	508 847	847	847	847	847	847	847	847	847	
243	—	700	850 1550	500 2050	1550	1550	1550	1550		550 2100	450 2550	2550	2550	2650	
Total		1210	1000	1000	1050	965	1855	800	1050	1000	1400	1000	1100	1100	
			1300	765	1245			720	945	900	990	900	990	990	
									960						

BARBER - PRESALE R 01266 16

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126617

4/29/40

Determine max quantity of 721-722 stocks to run in view of chuk pc!

		What Stock 4/30	Process Attacks			Ord Rec'd 5-1 12/31								
721 Reg	30/06	1476	660			2981								
	270	795				1172		4723			1300			
	280	498				570								
	300 Mag	107	415			436					0			
722 -	308	1096	1096	1610		546		2189						
	244	42				933								
	243	—				1250								
	222	681	501	1418		1236		1686						
	222 Mag	236				450								

Not more than 300 more 5/10

BARBER - PRESALE R 0126617
R2527605

3-68

DON'T SAY IT—WRITE IT

To Ant

From KRJ

Date 4/21/61

7/1

Assembly - 721-660

722-308/244-96

722 LLC 10½-57

721 MIG-44-400

Process - 721 mig-415

722-308/244-1096

THERE IS A SAFE WAY; DO IT THAT WAY

4/21/60

Status of stock damage 721-722-725 - 3/31/60

		Value stock 3/31	Stocks on hand	Latest date #2 F'cast	Best date based on equipment
721	30/06	124 - 216	660 1478	July	Oct - Nov.
	270	800 - 37	837	Aug	Jan. 61
	260	497 - 11	508	Sept	Nov.
	300 Mag.	70 - 17	44 - 415 546	Nov. 61	?
722	308	508	508	Oct.	Jan. 61
	244	74	96 - 1096 1266	June	Jan 61
	243		0	June	Jan 61
	222	585 - 137	722	June	Jan 61
	222 Mag.	282 - 3	57 347	July	Jan 61

725	306	1232	2230 3673	May '61	
	270	210		May '61	
	280	201		May '61	
	244	79	820	Dec '60	
	243	—		Dec '60	
	222	218	1839	3-4 yrs. (1959, 1st yr, 60 +)	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126620

721-722 Fleart #'s 1960

3/25/60

				Min mber	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
	37.	721	30/06	300	246	145	538	330	412	399	729	362	157	72	146	100	200
	13.5		270	125	44	47	254	126	156	207	194	143	70	22	62	59	44
	5x		300 Mag	50	26	23	83	43	90	73	67	47	11	22	27	16	26
			260	125	125	50	150	100	100	50	50	50	50	20	58	50	50
	6.6	722	308	100	21	38	119	37	63	119	103	41	40	24	29	13	21
	6.9		244	100	51	40	90	20	35	70	55	30	20	13	50	50	50
			243	100	300	100	200	100	100	100	100	100	100	50	30	30	30
	19.4		222	200	288	224	390	161	206	138	127	114	47	66	166	145	206
	7.4		222 Mag	50	72	81	142	51	85	59	43	44	15	11	38	35	72
		Total		2000	946	800	1700	1040	1200	1200	1400	900	500	300	700	500	800
						748	2066	948	1249	1215	1468	930	499				
									Production								
				What stock													
3760	1555	30.0	30/06	1215	50	450	1715	1715	300	410	420	900	3855	3855	3855	3855	3855	154
1367	617	11.9	270	646	200	846	846	846	846	175	525	1546	1546	1546	1546	1546	1546	1546
578	185	3.6	300 Mag	83	1	84	284	284	484	484	484	484	200	684	684	684	684	684
	256	4.9	284	277	325	605	605	605	605	605	605	605	740					
4774	316	6.1	308	515		515	515	515	515	515	300	85		815	815			815
705	266	5.1	244	91	20	200	200	511	511	511	511	511	511				400	
	656	12.7	243	—			600		400	400	1400	1400	1400	1400	140		540	300
19861	026	14.7	222	714	44	350	1108	490	510	2108	2108	2108	2108	45	987			
759	397	5.9	222 Mag	50	280	330	230	300	630	630	630	630	630	300				
	5183		Total	3591	940	900	945	990	900	585	945	900	940	752	987	940	1034	
									1340	985	1245							
									after 223 Mag 244's									

BARBER - PRESALE R 0126620
R2527608

Letter from Mitchell to Evans 11/4/59

Drop from line - 7xx - 257 cal.

In Oper. Comm. Minutes 11/4/59

Drop from line - 7xx - 244 cal. (not yet approved) 1/28/59

cc- A. Brown
N. L. Hackman
E Dapp

cc: J.B. Mitchell
Paul Richman
R.E. Miller
J.F. Finnegan

Bridgeport, Conn.
February 9, 1959

TO: S. M. ALEXIS

FROM: W. H. FOSTER

SUBJECT: [redacted]

Confirming telephone conversation with John Finnegan, it would be Sales' opinion that barrel specifications on M/721 and 725 rifles in 222 and 264 Remington calibers be as follows:

	222 Rem.	264 Rem.
Barrel Length	24"	22"
Weight	Heavy	Light

WHF:lk

cc- HK Faulkner
DE Miller -

cc: [redacted]

July 28, 1959

TO: [redacted]

FROM: J. K. PERRON

SUBJECT: [redacted]

Shipments to date 1959
(114)

Effective July 24, orders for barreled actions for the above models will no longer be accepted. Would you please advise those persons in your department handling the above of this notice. There will be a [redacted] sent through in the usual manner regarding the above.

JKP:lk

P.S.

Any orders we now have on hand are to be taken care of as promptly as possible.

3/30/54

check appn. dimen. minutes - 732 244 bar. approved
for small dia. bbl. same as 308.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M/7x1-7x Barrel Assemblies

			Sales 56 - 57 - 58	Inv.
7x1	30/06	x3x05	0 - 1 - xx	8x
	x70	x06	6 - 3 - 10	71
	300 Mag.	x3x07	1x - 0 - 0	80
7xx	300 Win.	x3x08 (1995 Roll 13)	0 - 0 - 0	x7
	x07	x3x09	6 - 0 6	4x
	308	x3x11	- - 6	38
	xxx	x3x10	9 - x - 14	4
	x4L	x3x1x	0 - 5 - x	1

20 available for

10/11/60

AVB.

Start up the 721-722-745
on paper.

ART.

9/721 GUNS-ASSEM AREA 9/20

30/04-46

270-1

1359
783
1176

G-88

DON'T SAY IT—WRITE IT

DATE 9/18/60

TO _____

FROM _____

721 — STOCKS

Assembly House 288

wood shop 241

529

9/30.
Start 390 stocks

Lew. Sims.

THERE IS A SAFE WAY; DO IT THAT WAY

8/25

721-722 - cut off due to change to Sporter stock

Bruce strikes and assemble no more than three Quantities — starting 8/15

			Orig Run	Kept
721	30/06 -	1011	183	46✓
	270 -	348		21
	300 mag	54		
722	308	96	(1)	
	244	83	7	8
	222	0	1	4
	222 mag	0	4	2
	~~244~~	~~20~~	~~33~~ =	49
721	280	0		

721 - no more BBE 2nd.

589
79
668
529
194

7/22 - 222 cal.

Assembly - 30

M/760 -

#3 Flash - Sept - 2500

Shipped raw stock 9/16/60 - 4348

Est. to rec. end of month 1310

5658

3780

1878

Ammo. to Ship - To furnish.

30/06	20	1230
30/06 e	66	1600
300	10	
35	58	
270	240	
270 e	8	800
257	257	
244	—	
308	251	
308 e	65	150
222	480	
280	156	
26 e	103	

Total

17337

16947

390

180

19

1620

150

3450

M/722-P

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - PRESALE R 0126633

3-88

DON'T SAY IT—WRITE IT

To C. H. MORSE
H. L. CHAMBERS

Date Feb. 1, 1961

From W. E. LEEK

RECOMMENDED LOADING OF THE 223 CARTRIDGE - S. C. TOULSON

Bullet: 55 grain metal case, 24½ grains of 4475 powder.

Measurements in a 22" barrel produced a velocity of 3275 fps, with a max. average pressure of 52,000 psi.

Accuracy specifications at 200 yards: Mean radius 1.5".

WEL:T

THERE IS A SAFE WAY; DO IT THAT WAY

BARBER - PRESALE R 0126633

R2527621

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
January 11, 1961

~~W. E. LEEK~~ WL

COST ESTIMATE - XP-722

The following estimate was made to determine the approximate cost of the XP-722. Where parts similar to current model components are used, identical costs are assumed.

Part Name	Standard Labor	Standard Material
Receiver	1.1544	.7588
Barrel Bracket	.0249	.0250
Barrel	.5000	.3900
Trigger Housing	.0400	.0400
Trigger	.0416	.0073
Trigger Adjust. Screw	.0005	.0108
" Pin	-	.0057
" Link Rollers (2)	-	.0200
" Link Pins (2)	-	.0150
Sear Housing	.0009	.0040
" Block	-	.0500
" " Spring	-	.0077
" " Screw	.0005	.0108
" " Pin	-	.0057
Trigger Stop Screw	.0005	.0108
" Balance	.0300	.0300
" " Spring	.0050	.0050
" Link	.0400	.0400
Sear	.0238	.0280
" Pin	-	.0132
Safety Cam	.0325	.0290
Bolt Stop	.0046	.0439
" " Pin	-	.0137
" " Spring	-	.0096
Safety	.0090	.0633
" Snap Washer	-	.0077
" Pivot Pin	.0005	.0087
" Detent Ball	-	.0009
" " " Spring	-	.0171
Stock Bolt (Fwd.)	.0009	.0192
Stock Bolt (Rear)	.0009	.0192

Part Name	Standard Labor	Standard Material
Main Spring	-	.0472
Firing Pin	.0078	.3101
Bolt	.5901	1.4262
Firing Pin Head	.0472	.0627
" " Cross Pin	.0005	.0120
Bolt Plug	.1090	.0514
Extractor	-	.1500
Ejector	.0010	.0740
" Pin	.0004	.0030
" Spring	-	.0100
Stock Assembly	.5000	1.0000
Front Sight	.0500	.0400
Rear Sight Assembly	-	.2700
Ventilated Rib	.0500	.1000
Rib & Sight Screws (4)	.0005	.0050
Receiver Plug Screws (6)	.0005	.0050
Final Assembly	.9290	-
Test & Target	.1310	-
Packing	-	.250
Total	$ 4.33	$ 5.52

Total Cost of Gun: $ 9.85

H. L. Chambers

HLC:T

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington (DU PONT) PETERS (DU PONT)

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

January 12, 1961

W. E. LEEK

XP-722 DESIGN SPECIFICATIONS

The following design specifications were set up in a meeting with H. L. Chambers and W. E. Leek on this date. These design features and specifications were established as criterions for a preliminary design.

1. Overall length - 15 inches
2. Barrel length - 10 inches
3. Lockup - double lug - Gewehr type
4. One-piece barrel and receiver
5. Semi-automatic - Gas Operated (Orifice 1/2 inch from muzzle- push rod over barrel - covered by rib)
6. Screw in receiver plug - rear
7. Craig or box magazine
8. Semi or full automatic - selector on receiver

s/ H. L. Chambers

H. L. Chambers
Arms Design Section

HLC:NL

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

December 28, 1960

W. E. LEEK

WEEKLY REPORT
Week Ending Dec. 25, 1960

XP-722 Progress

The stock for the original model has been completed, and we are now awaiting completion of the rear sight assembly. This should be done sometime during the first week of January, 1961.

XC-10 Design

Basic design layouts have been started for the XC-10. It is proposed that the gun will be in two models, a rotary magazine system for rimless shells and a tubular magazine for rimmed shells. Both designs will utilize the same basic elements, except for the feeding systems.

The designs will encompass a formed stock and fore end, these being welded to a two piece stamped receiver. The fire control will be contained in the receiver, thus making the floor plate a non-functional.

It is my intention to layout the proposed system, allowing room for a 30-06 rotary magazine. This layout, in it's initial form should be completed during the first week of January, 1961.

H. L. Chambers
Arms Design Section

HLC:MN

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

November 22, 1960

W. E. LEEK

WEEKLY REPORT

M/XP 722 PROGRESS

A meeting with Production and Research metallurgists was held this morning, and material and heat treat specifications were established for components of this gun.

As of now all major parts of the gun have been detailed and only two or three minor parts have not been drawn. The completed drawings will be turned over to J. A. Roberts some time today.

Nylon 66G TEST

Testing of the Nylon 66G has been completed. A final report has not been written as yet but it is estimated that this report will be in your hands on or before December 7, 1960.

H. L. Chambers/N.L.

H. L. Chambers
Arms Design Section

HLC:NL

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-49-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

October 31, 1960

W. E. LEEK

WEEKLY REPORT
Week Ending 10/30/60

M/722P Progress

Model parts for the M/722P preliminary design are coming along on schedule. The remainder of the parts for the action should be completed during the first part of this week, and a time estimate for building the stock indicates that it should be completed during the latter part of next week.

N/66-G Test

Testing of the Nylon 66G is progressing on schedule. The first part of the test was completed on October 28th and results showed a malfunction rate of 1.4% over the entire range of nine guns and 12 types of ammunition. Part 2 of the test started on schedule this morning.

H. L. Chambers
Arms Design Section

HLC:NL

cc: ~~R. P. Kelly~~
W. E. Leek

October 31, 1960

R. P. KELLY

WEEKLY REPORT

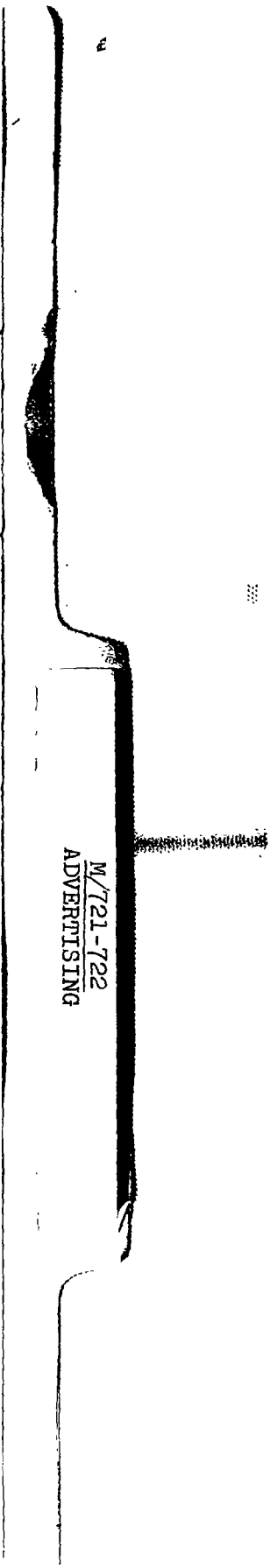
Redesign and make new nylon floor plate to test for strength.

Investigate process of making aluminum receivers for M/721, and short receivers for Howard Chambers small gun.

Charge of Model Shop week of 10/24 - 10/28 during J. A. Roberts absence.

N. E. Williams/nl.
N. E. Williams
Arms Design Section

NEW:NL


M/721-722
ADVERTISING

bcc: ~~S. R. Hutchinson, Mgr. Advt. Bpt.~~
→ J.F. Finnegan - Ilion

Technical

August 5, 1963

Mr. S.C. Tegan
2310 Hillvale Avenue
West Lawn, Penna.

Dear Mr. Tegan:

Some time ago you wrote to Mr. S.R. Hutchinson of our Advertising Department regarding the inadequacies of information about the strength tests on high power bolt action rifles. Although you did not specifically ask for a reply Mr. Hutchinson thought that we might wish to further advise you regarding the background and also of our restraint in supplying more specific data.

In firearms research we have always been rather reluctant to publish technical information that may suggest inherent deficiencies in other U.S. made firearms, and especially where there may be numbers or values (figures) involved. First it can become controversial since difficult to exactly duplicate the same methods of measurements, together with variations in instruments. However we have had occasions to give and receive information to and from other manufacturers when it seems to be in the best interest of safety. This explains our identifying the test guns by letters such as "A" or "B".

When the Model 721 rifle was introduced in 1948, one of the features claimed was that of unusual strength for the action and made possible by virtue of the unique design of the patented extractor. With this spring ring type of extractor located within the counterbore of the bolt head, it is possible to eliminate need for any extractor clearance cuts in the bolt and thus provide a complete shroud around the base of the cartridge when subjected to excessive cartridge pressures beyond the yield point of the brass. It will usually swell or expand into the shroud of the bolt head but supported by steel so that no rupture occurs. Under extreme pressures the primers will usually be blown and possibly it may also drive the firing pin rearward but without damage to the rifle beyond an extractor replacement. Most important of all there is protection for the shooter. However, in our destructive tests we have overloaded rounds to the extent that the recoil was sufficient to split the stocks but still the action was not damaged.

When Weatherby started advertising their rifle as the "world's strongest action" we were certain that this was not true, so repeated our tests with their rifle which caused the bolt to fail. We then agreed to permit our Advertising Department to use counter advertising with the claims that you have questioned.

You are entirely correct that the "weakest link is still the brass". This was the object for our bolt and extractor design, i.e., to provide complete support for the brass which would prevent sufficient expansion to a point of rupture. We have never been able to wreck a Model 721 type of action with any cartridge overloads and the pressures attained were beyond the range for our instrument measurements. However they were estimated to be well in excess of 100,000 lb. p.s.i. This same extractor and bolt design has been carried forward for use in the current Remington center fire models.

When the Model 721 rifle was first introduced, the late General Hatcher, was a staff writer and consultant for the NRA. He learned of our strength tests and visited the laboratory to obtain data to use for the basis of an article which was published in the American Rifleman magazine. At the moment I do not recall the exact date of the issue but believe it was about March or April, 1948.

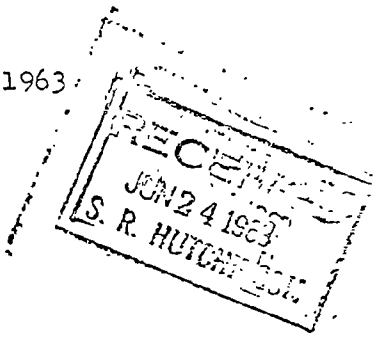
We appreciate your interest in rifle designs and the opportunity of describing the background, development and tests in this field.

Sincerely yours,

S. M. Alvis, Manager
Ilion Research Division

SMA:B

June 21, 1963



Remington Arms Company, Inc.
Bridgeport 2
Connecticut

Attention: Mr. S. R. Hutchinson, Manager
Advertising - Firearms

Dear Sir:

I have received a copy, on my request, of your "proof-tests on rifle bolts" and it is quite apparent that you are far from being a technically oriented person.

The so called tests as reported are meaningless for at least three basic reasons. The actions used are not specifically named, the pressures are not given nor is the name of the brass case used in the tests indicated. Furthermore the condition of each action is not given as determined by both Rockwell testing and sonic testing prior to any increment pressure application.

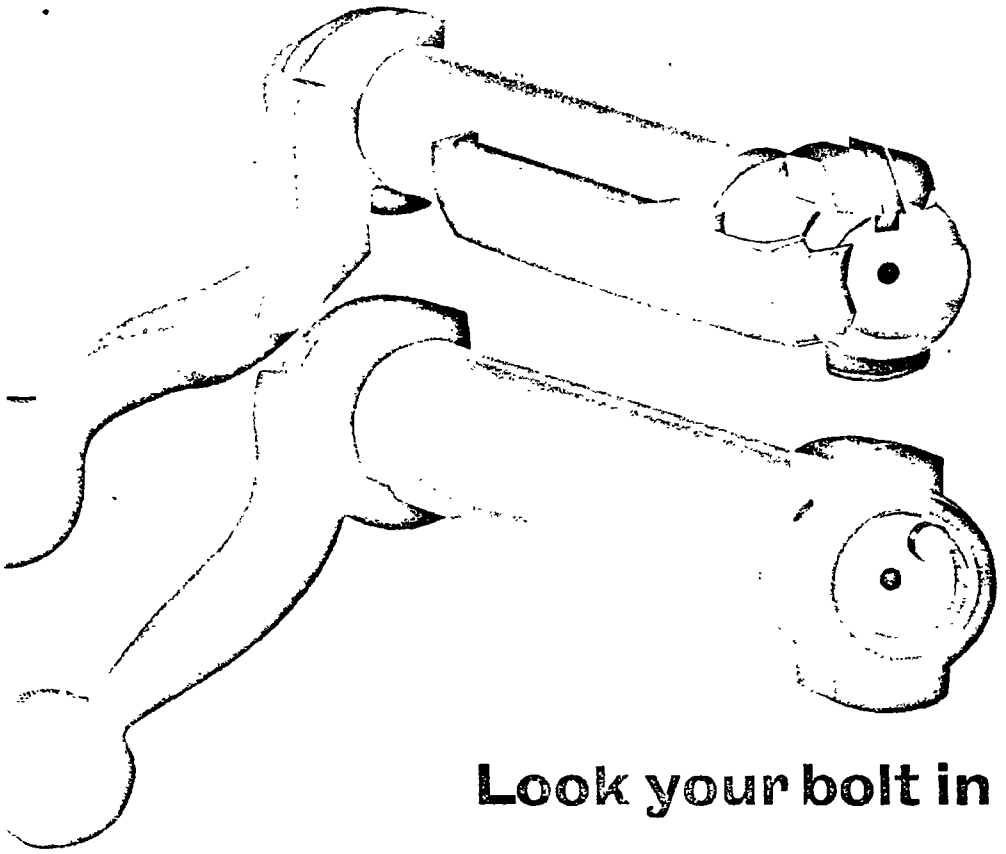
To make your claim rather ridiculous, I would ask for your own enlightenment, that you test a Schultz and Larsen and a Weatherby action for ultimate tensile strength.

Finally, any comparative strength test must be made with the understanding that loading at normal 50/55 thousand PSI pressures is far below the ultimate rupture strength as produced in a lab and that generally all Mauser type double lug actions have the same area of support, case head enclosure being entirely another matter and more allied with gas escape than bolt thrust rupture. The weakest link in the chain is still the brass.

To see how fast a Remington 700 comes apart try a non-increment pressure of about 17,000# explosion.

Yours very truly,

S. C. Tegan



Look your bolt in the face

Look carefully at the two center-fire rifle bolts pictured above. The bolt on top is from a discontinued Remington rifle. The patented bolt below is from a modern Remington Model 700.

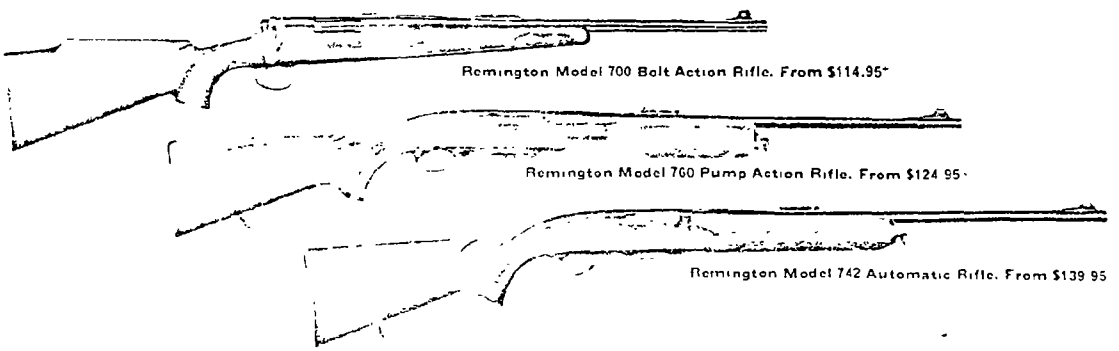
Notice that the rim of the top bolt is actually cut away to permit external extraction and ejection. This bolt leaves the cartridge *unsupported* over a considerable section. Yet, it works satisfactorily.

But now look at the modern Remington bolt beneath. It isn't cut away because the extractor and ejector are located *inside the rim*. This means the cartridge head is supported *all the way round* by a ring of solid steel. Most important, when the action is closed, this steel ring fits into a second ring countersunk into the heavy, chamber end of the barrel...and then both rings are surrounded by the receiver itself. Three overlapping thicknesses of solid steel support the cartridge head...something you'll find on no other make of rifle!

Obviously, this modern Remington construction is stronger. In fact, it is the *world's strongest bolt action.*†

Every Remington center-fire rifle—bolt action, pump and automatic—now has this modern design. It's typical of the solid reasons why your next high-power rifle should be an accurate, reliable Remington. *Remington guns are better because they're made better.* See the full line of fine 1962 Remington sporting firearms, made in the U.S., at your dealer's now. †*Comparative proof tests available on request.*

Remington DUPONT



Remington Model 700 Bolt Action Rifle. From $114.95*

Remington Model 760 Pump Action Rifle. From $124.95*

Remington Model 742 Automatic Rifle. From $139.95

Remington Arms Company, Inc., Bridgeport 2, Connecticut, Remington Arms of Canada Limited, 31 Dundas Street East, Toronto, Ont. *Prices subject to change without notice.

March 24, 1965

Mr. Carl E. Swanson
4 Vista Road
Englewood, Colorado 80110

Dear Carl:

I was certainly happy to receive your letter the other day and am most happy to answer the questions concerning guns and gun design.

First of all, on your Model 1100 Trap Gun, we do a special operation on the fire controls to tune up, so to speak, the trigger for all of the trap guns. I will send you a fire control along with a new forearm, and would appreciate if you would advise me as to how the fire control performs. In the meantime, please send me your fire control as I would like to investigate it more closely and then perhaps I can advise you as to what should be done to correct the problem.

As far as the forearm is concerned, I haven't the slightest idea what grade of wood your shotgun contains. However, if the forearm I send you does not match, then send me your old one and I will try to get a better match for it.

As to the modified choke, it would best be ordered through your local dealer.

Approximately 90% to 95% of all of our barrels are interchangeable in our M/1100 shotguns. But when you get your shotgun barrel, check with the headspace gauges that I know you must have in the school to see that they will accept a min. and not accept a max. gauge. If you have trouble in this area, please advise.

Now as to the strength of bolt action rifles. This is a subject that I enjoy talking about, as there have been so many myths and opinions in the past and at present with claims made, some based on fact and others on opinions again, that you should get the true known facts so that the boys in your school will not be mislead.

As I probably related to you, my basic experience in gun development started at the Aberdeen Proving Ground where I set up the tests for all of our small arms military weapons during the war. And my first job here at Remington after that

experience was to do the same thing for the Remington. And I will say here that our tests are much more stringent at Remington than they are with the military, both endurance-wise and function-wise.

As far as the functional aspects are concerned, our shotguns are subjected to tests upwards of 35,000 to 50,000 rounds each with a careful check being made on every round that is fired. We shoot them from the various types of shoulder resistances which cover the spread of all humans, light and heavy. We involve them in all kinds of shooting conditions: rain, ice, snow, extreme cold conditions down to 40° below, with extreme high pressures. Then drying the guns out to a point of very low humidity and subjecting them to considerable amount of oil, all of which add up to a very thorough test on our shotguns. Basically, our rifles go through the same thing, but in addition even though the shotguns are subjected to handloads of various descriptions, the rifles are the ones that really get the works.

The first really high pressure strength test, I believe, that was ever conducted on a center fire rifle was that conducted on the Model 721. Now I know in the past that higher pressure tests have been conducted on rifles, but they mainly involved those tests with steel cases such as General Fletcher conducted in the Springfield Armory. The basic item to consider here is the fact that with all rimless cases the cartridge is unsupported in the rear section; and therefore the strength of the gun is dependent upon the strength of the cartridge case. Oh, I admit that lugs, barrel dimensions, etc. are important. But there is no rifle in the world that will contain a ruptured cartridge case that is unsupported because of its lug size. For one must remember that the pressure generated in a cartridge and in the chamber section is pounds per square inch, and once a cartridge ruptures in the rear section or the primer pocket opens up, the pressure there escapes rearwardly, and works on every area that is exposed to it. And pounds per square inch can really build up to astronomical proportions that will take any of these guns apart.

So the secret, therefore, is not in the strength of a rifle, and not to depend entirely on the strength of the cartridge case, but to support it so that it cannot escape those high pressures rearwardly into the action. This is just exactly what was done in the Model 721. The tolerances were held close enough that the expansion of the cartridge case into the shroud of the bolt was small enough that only the primer pocket could expand to a small degree, allowing enough gas rearwardly to cock the firing pin and that was all. The shroud in turn was supported by a recess in the barrel, which in turn was supported by the receiver.

Now to give you an example of how far we conduct our tests. We worked up from a proof load which generally is about 2.7 grams of 4198 powder in a 30-06, and by the way the 30-06 combination is the most potent of all. The first super proof loads which were 3.2 grams of 4198 powder were tested in all existing rifles including the M/721. A few of the rifles blew up at this pressure level; such as the Springfield, Japanese Arisaka, and others of weaker design. In this particular instance, 3.2 grams of 4198 powder were developing pressures upwards to 100,000 ppsi, and actually the brass case is not strong enough to accommodate anything much over 60,000 ppsi unsupported. The M/721 went through at this point with flying colors.

We then started to ramming bullets in the 220 grain category ahead of the chamber, not allowing of course any space between the protruding bullet of the existing pressure round and the jammed bullet ahead of it, as this would split barrels, if the space was between these two elements. The M/721 continued on up to five 220 grain slugs ahead of a 3.2 gram load. The pressures were so high after 2 slugs in front of the cartridge that at that time we had no proper measuring equipment, and only estimates and calculations could be made. However, it was been later determined that we have reached somewhere in the neighborhood of 500,000 to 600,000 psi in these rifles. The end result, of course, is that the cartridge swells to the limit of the shroud and a little beyond as all of the clearances are taken up between the shroud and the barrel, and the barrel and receiver. And in a sense the cartridge, the bolt shroud, the barrel, and the receiver are welded together in an integral piece. It would be, and was, impossible for us to extract any portion of these parts from the other, and the only way examination could be made was to cut the section in two, right through the front face of the bolt, and there one could see a good example of high pressure forming, or explosive forming, as it was impossible to distinguish where the shroud in the barrel and the receiver joint were.

Now what happened to those slugs that were in the barrel. Well, in most cases they all fired out of the barrel and of course in all cases the stock was shattered to shreds. But I'll give you one example that caused my dear friend, General Hatcher, who was here at the time during the tests, to consider some of the basic laws of physics. One case we had a 5 slug 3.4 gram of 4198 powder loaded in a M/721 and this all contained in our test device, which, as you, is bolts rearwardly after the shot is fired. This particular day the explosion took place upon pulling the trigger, but the device did not recoil rearwardly. We allowed the combination to simmer down for two days before opening the lid on the test device, and we found the stock was intact, the gun was of course locked up and welded together, and no damage to any of the parts. Upon close examination by putting drift rod down the barrel we found that none of the 5 slugs had moved. They were wedged in so tightly at this particular combination that this high pressure of 450,000 or 500,000 psi was not sufficient to propel the projectiles forward. Now according

to Newton's Law for every action there is an equal and opposite reaction. Because there was no movement forward of those projectiles the recoil did not take place and therefore, the stock did not disintegrate. General Hatcher at this point emitted a couple oaths and said: "Well, I guess old Newton was right."

Now as to comparison of other rifles. During this test, however, all types of rifles including well known competitive brand were tested and they all fell by the wayside with about one slug in the barrel. This of course was normal and natural as the gun was depending upon the brass cartridge case and not upon its inherent lug ability to hold the mechanism intact. To prove our point we cut off the shroud of a M/721, subjected it to one slug in the barrel with a 3.4 gram load, and immediately blew up the gun, putting it then in the category with the old-fashioned old-designed types. Since that time other concerns have started to copy the M/721-700 action. However, upon close examination you will find that they haven't quite copied all of the right elements.

Here is another point to consider. Which is the safest? To allow a cartridge case to blow up at 70,000-80,000 psi, or to retain it up to a point where it will reach 150,000 psi and then blow? Well, for me, I would take the one that blows earlier because less damage could be done. However, if I were to design a gun and wanted to go beyond the strength of the cartridge case, I would go all the way, such as we have done in the M/721, and not halfway, as the halfway point is much more dangerous.

I do not want to comment on our competition at this point. All I can say is that they are halfway. Perhaps you can put two and two together and get the correct answer from this statement. However, please don't quote me. The only thing I'm giving you here, Carl, is fact and not fiction.

We here at Remington as I have said before, test our guns more severely than the military and certainly know more, I believe, about testing, and test our guns more stringently than any commercially made rifle or shotgun. Naturally, when new developments are made competitively we test all of these to determine where they stand with respect to strength and function and how they compare with our own. And I can truthfully tell you based upon fact, that our rifles and shotguns are stronger than our competition. For example, I was testing some bolt action shotguns about 6 months ago to establish a strength characteristic in these designs which had been connected with an ammunition problem, as we by the way do not make bolt action shotguns, and I found out some very gratifying things which I can't reveal here as they would involve competitive guns. But believe me, I certainly would not shoot any of these from the shoulder. Just because there is a large bolt handle and an apparently large piece of steel supporting it, does not mean that the gun is strong. And these misconceptions can cause difficulties.

Going back to my tests with General Hatcher. After he examined the results of our tests he immediately sent to me an M1 rifle, an Enfield, a Japanese Arisaka converted over to a 30-06 and some others that I do not recall. We sent them all back in a box, all in a multitude of broken, scrap, twisted metal. I had no comment from General Hatcher after returning those guns to him as they demonstrated some weaknesses which he probably did not wish to reveal at that time to the general public.

The Model 600 was a good subject for test as it contained the same bolt mechanism as the M/721-700 systems. However, the receiver is much shorter and therefore stiffer. This has nothing to do with the strength of the gun but does have something to do with the supporting of the back of the bolt, keeping it in line with the chamber. In order to test the M/600 we rechambered it to a 30-06 so that we could keep our basis for tests on the same pattern, and subjected it to these high pressure tests such as mentioned in the letter. It, too, withstood all of these extreme high pressures and was, as we say, normal in every respect.

My comment on which cartridge has caused the most problems. The 30-06 will blow up a gun faster than any caliber I know of, as it can be loaded to a much higher degree than any of the others based upon its cartridge case strength and bore diameter. A 270 will not come anywhere near the 30-06 in developing high pressures when the barrel is plugged. The Magnums are another story. Here we have a cartridge case that has been reinforced and therefore does not require the same support around the base of the case that the 30-06 actually would require. Therefore higher pressures can be obtained with the belted case with an unsupported, unshrouded gun.

For my money when I am experimenting with handloads, accuracy shooting and a little above normal pressure work, I'll take the M/700 and 600 actions, and the rest of the experimenters can have their so-called strong actions for this work. I have a lot of faith in the combinations of ammunition-primer-powder, etc. but not enough to put my cheek on top of it. I'll take the shrouded support that in turn is also supported by the barrel, and the barrel supported by the receiver. And I think I'll come out way ahead of the game with both eyes, ears and head on my shoulders. At least I would have greater peace of mind.

I hope that I have answered your questions, Carl, and I'll get these items off to you as soon as possible. Please let me hear from you soon. By the way, as far as M/700 actions are concerned, the policy is now that you can obtain these from authorized Remington dealers now. If you have any difficulty in obtaining these items from your gunsmith, please let me know.

Best regards,

Wayne E. Leek
Manager - Firearms Research & Design
Ilion Research Division

WEL:T

Remington Peters
DUPONT
Wholesale Salesmen's
INFORMATION

Volume 7, No. 7 August 1961

ANNOUNCING A NEW CALIBER

264 WIN. MAGNUM

IN THE POPULAR MODEL 721

Model 721 Bolt Action Big Game Rifle
Calibers: 280 Remington, 30-06, 270 Win., 300 H&H Magnum, and New 264 Win. Magnum

Ever since Remington announced availability of the 264 Win. Magnum cartridge, there has been an increasing number of requests that we chamber a bolt action rifle for this cartridge.

The 264 Win. Magnum cartridge is available in 100 and 140 grain bullet weights. Both bullets are of the pointed soft point type with game-stopping Remington "Core-Lokt" or Peters "Inner-Belted" construction.

PRICES

	Dealer	Retail
Model 721A	$ 92.75	$ 123.65

Now, with addition of this new caliber to the Model 721 high power rifle - with "world's strongest bolt action" - you have an even wider range of calibers to sell in an already versatile Remington center fire line. Look for that extra sale - the Model 721 in 264 Win. Magnum - on every dealer call.

"Core-Lokt" is Reg. U.S. Pat. Off. by Remington Arms Company, Inc. and "Inner-Belted" is a trademark of Peters Cartridge Division.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

cc: J.H. Lewis, Jr.
S.M. Alvis

Ilion, New York
January 8, 1960

J. D. MITCHELL
BRIDGEPORT

M/721-722 - ADVERTISING

Please refer to a letter from S.M. Alvis to you on above subject and dated February 5, 1957. During that time we were experimenting with a new type of extractor which involved a cut in the shroud of the bolt head, and which has a tendency to weaken the complete shroud of the bolt head, as we do in the M/740.

Since that time our efforts in the design of the new Model XC-6 Center Fire Rifle include the M/721 type extractor and the completely shrouded bolt head. We are not far enough advanced with the testing of this model to determine whether or not this type extraction system is adequate, but I have a feeling that the final design will result in this system. Therefore, believe that we can proceed in continuing our advertising of extreme strength, etc. in the M/721 containing no extractor cuts.

As you probably are aware, the new Weatherby bolt action rifle claims to be the strongest in the world. The bolt contains a series of lugs similar to the M/740 but the shrouded head contains an extractor cut which weakens this section. I had planned some months ago to subject a new Weatherby rifle to our strength test, so an order was placed for a 30-06 Caliber. Instead we received a 300 Magnum. Since all of our basic tests involve the 30-06, we are re-ordering in this caliber so that a comparable test can be made. You will be advised of results of this testing, as well as any changes that might take place in the design of the new rifle.

W. E. Leek, Supervisor
Arms Design Section

WEL:T

RD-49-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

Thelma Please send copy of this letter to E. Larson Bpt

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: E.G. Larson - Bpt.

Ilion, New York
May 17, 1965

TO: W. E. LEEK

FROM: W. L. DAHL

MEMORANDUM REPORT

DAMAGED MODEL 721 - #54124

Subject rifle, Caliber 270 Win., was forwarded by the NRA for examination following blow-up by owner, Leland C. Richards. Both locking lugs and the bolt handle were sheared from the bolt body by an excess pressure round.

The rifle was manufactured in 1948 before installation of the microcarb furnaces and similar damage to other such guns has been reported. It is unlikely that current production guns would be as extensively damaged even by the extreme pressures that obviously existed in this case.

The fired cartridge case, of Winchester manufacture, shows signs of being fired with chamber pressures on the order of those developed in Caliber 30-06 rifles by a full case of Bullseye behind a 220 grain bullet. Our guns are not ordinarily blown up by such a load but in this instance the cartridge case failed, thus allowing the full diameter of the bolt face to be pressurized. This, in the presence of the obsolete bolt, led to the damage. The mouth of the cartridge case retains the factory trimming burrs and these have not been ironed out as they usually are in a reloaded case. There is, however, an abrupt termination of the smoked portion of the case neck about 1/16 inch ahead of the neck shoulder juncture as often seen when a cartridge case has been neck sized only by a handloader. Perhaps the strongest indication that this was a handload is the fact that the shooter was not killed. The bolt must have come out of the receiver like a bullet and it is hard to believe that this shot was fired from the shoulder without injury. Thus one suspects that the gun was tied down and fired remotely, which leads to conjectures whether it was deliberately blown up.

After removing the fired case a new breech bolt was inserted for a rough check of headspace, which was found to be .001 inch over maximum. The barrel was air gaged and found .2785 inch groove diameter full length excepting a five inch length at the muzzle that was .280 inch diameter, more or less typical of the old cut rifled barrels. With these dimensions, however, one supposes that the

barrel was not a very accurate one. A borescope examination showed no signs of a barrel obstruction but did reveal severe erosion ahead of the chamber. A magnaflux examination revealed no cracks in either the barrel or the receiver of the damaged gun.

The firing pin nose was severely eroded indicating repetitive primer piercing. The interior of the bolt was loaded with foreign material. Some of this was carbon from the effects of escaping gas and some was polymerized lubricating oil. The major portion of the material remains unidentified but it is noted that the shoulder of the fired cartridge case is heavily imbedded with a similar appearing material.

Following examination the scope mounts were returned to Custom Repair in accordance with their request. The rest of the gun has been scrapped per E.G. Larson's letter.

WLD:T

cc: Wayne Leek

Bridgeport, Connecticut
February 26, 1965

TO: F. W. WOODRICK - ILION

FROM: E. G. LARSON

SUBJECT: LELAND C. RICHARDS - #18302-P.I.
SEE WAYNE LEEK'S LETTER TO E. G. LARSON
OF 3/30/64

Dear Fred:

We have closed this out by giving Mr. Richards a new Model 700 in exchange for his 721.

Wayne Leek had previously asked that they be allowed to do some destructive testing on the damaged gun to find the cause, and we ask that you forward it to Wayne and that he give us a report on completion of tests.

Once completed, the remains can be scrapped.

E. G. L.

Manager, Products Service

EGL:k
Attachments

bcc: F. W. Woodrick - Ilion
Wayne Leek - Ilion

February 26, 1965

Mr. Leland C. Richards
Box 1005
Sterling, Colorado

Dear Mr. Richards:

We have your letter of February 17 and, from its contents, we now see where the mixup occurred.

Your previous letter answered by our Mr. Bruce Reynolds, was not directed to my attention and was handled in a normal manner by our Consumer Correspondence Group. As he stated, we only sell through wholesaler - dealer channels and, of course, he had no information as to our correspondence concerning a damaged gun on which we were making a special offer.

As requested, we have entered an order to have shipped to you prepaid, at no charge, a Model 700 BDL caliber 243 Winchester rifle in exchange for your damaged Model 721 #54124. $20.00

The difference in price between the ADL and BDL is $5.00, and we ask that you forward us your check made out to the Remington Arms Company, Inc., in the above amount, marked to my attention.

Many thanks for having afforded us this opportunity to be of service.

Cordially yours,

REMINGTON ARMS COMPANY, INC.

E. G. Larson
Manager, Products Service

EGL:k

Form No. RD [illegible] REV. 10-63

RECEIVING and ESTIMATE REPORT

ORDER R 5621

PROM. DATE

REC'D 2/16/65 ESTIMATE VIA PP. CHARGES

FR Walter J Howe (Director + Elder
Wash D.C. National Rifle Assoc.)

MODEL and GRADE 721 - 270 - SERIAL NO. 54124 CODE XTT - 12/48

Fine steel, with sights removed

REPAIR CHG.

INS.

PARCEL POST

GUN CONDITION (New) (Slightly worn) (Very worn) (Misused) (Quote) TOTAL

CUSTOMER'S COMPLAINT

MAIN FAULT

GALLERY REPORT

Gun delivered to Wayne Leek 3/3/65 for examination + destructive testing — (after testing gun is to be scrapped

Per E. D. Jansen's letter - 2/26/65

(Clean) (Test) (Target)

Repairman

bcc: Wayne Leek - Ilion

September 11, 1964

Mr. Leland C. Richards
Box 1005
Sterling, Colorado

Dear Mr. Richards:

A short time ago, we received from you through Mr. John M. Schooley, a Remington Model 721 caliber 270 rifle No. 54124 in damaged condition and advised that you were injured at the time of this unfortunate mishap. At a later date, Mr. Schooley forwarded to us one caliber 270 reload that allegedly was from a batch in use at the time the gun was damaged.

We were indeed sorry to learn of your injury and trust that by this time you have fully recovered.

Upon receipt of your rifle, our firearms experts examined it thoroughly and reported that it contained our high-pressure proof, gallery test and final inspection stampings, indicating it had successfully passed all necessary tests prior to shipment.

All individual parts within the arm were entirely within specification, and the damage encountered resulted from a reload that produced excessively high pressures, far beyond those experienced in the normal firing of an industry proof load.

This model rifle, Mr. Richards, has been tested many times by our firearms designers, and we have found in these tests that the Model 721 will withstand five (5) 220 grain bullets lodged directly ahead of a 3.2 gram proof load of powder.

The one cartridge returned was subjected first to a visual and gauging inspection, and we found that it would not chamber by 1/8" due to lack of proper base well resizing. The cartridge was pulled down and found to contain a 110 grain bullet with 41.9 grains of what appeared to be 4895 powder.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Mr. Leland C. Richards September 11, 1964

In measuring the shell dimensions, we found the head-to-shoulder length normal, but the overall shell length was .010" over our specification for the caliber 270 cartridge. Overly-long shells are conducive to higher than normal pressures.

In review, Mr. Richards, it is definitely borne out that the damage to the gun and your unfortunate experience resulted from the use of an improper reload and we cannot, therefore, accept any responsibility or liability for the accident.

We are most anxious to make a further study of the stresses to which the damaged gun has been subjected, and this can only be accomplished by dissecting the chamber area, etc. With this in mind, and as indicated by Mr. Schooley during my visit with him at the N.R.A. show, we would be willing, solely as a gesture of customer good will, to exchange your presently damaged arm for a Model 700 ADL in the caliber of your choice, at no cost to you.

If this offer--which we believe to be eminently fair--is acceptable to you, please advise at your convenience so that the necessary shipping instructions can be issued.

We appreciate having had this opportunity to be of service, and await your reply.

Cordially yours,

REMINGTON ARMS COMPANY, INC.

E. G. Larson
Manager, Products Service

Per E G Larson 11/13/64 has received answer, yet to be filed

EGL:k

cc: John M. Schooley

Gun returned to L. Richards 11/17/64 [illegible]

Ilion, New York
March 30, 1964

E. G. LARSON
Bridgeport

MODEL 721 RIFLE RETURNED BY N.R.A. (Leland C. Richards)

The subject rifle arrived last Thursday, 3/26, and there is no doubt about it the pressures involved are exceedingly high. I contacted the services of Kelly Chadwick, who was in charge of the heat treatment of the bolt assembly during the initial stages of the M/721. He states that because of some brazing difficulties in attaching the bolt head to the bolt body it was necessary to carburize the bolt head itself. And there is about two years production of bolt heads heat treated in this manner.

These bolts were extremely strong but would shear off when pressure loads were in the neighborhood of 140,000 ppsi. This of course is higher than one would expect in normal military rifles such as the Springfield, the Model 70 in commercial rifles, and others, and I believe is about in the area that is claimed by the Winchester people on their new Model 70. However, it has been our experience that this strength is not good enough and there were several complaints from customers who sheared off lugs in their M/721's at that time.

A microcarb furnace was introduced to eliminate the difficulty and we have, as far as I know, experienced no further trouble. But on occasion one of the old carburized bolt heads allows a gun to blow up.

The original testing which was conducted in the model test and also based on the pilot lot run of 500 rifles did not contain carburized bolt heads, resulting of course in a very substantial high strength in this model. Metallurgical changes took place without the knowledge of Research & Development, until customer complaint aroused suspicions in this area. Since that time at various intervals we have reconducted strength tests on the M/721, 725 and the latest models 700 and 600, and have found the bolt and receiver combination along with the barrel to be of the same magnitude and strength as the original models; i.e. they will withstand five 220 grain slugs directly ahead of a 3.2 gram proof load of 4198 powder.

Eventually we are going to set up special equipment to measure the pressures that are developed under conditions such as this, but at the present time are guessing that this pressure must reach a maximum of around 350,000 ppsi.

To further investigate Mr. Richards' gun it will be necessary for us to dissect the chamber area and explore the conditions of the cartridge case, the chamber walls, and any other pertinent information that might be available. If you wish us to continue further with this investigation, please advise.

W. E. Leek
Firearms Design Section
Ilion Research Division

WEL:T

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-69 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
DUPONT

Bridgeport, Connecticut
March 18, 1964

TO: ~~WAYNE~~ LEEK - ILION

FROM: E. G. LARSON

SUBJECT: MODEL 721 RIFLE RETURNED BY N.R.A. (LELAND C. RICHARDS)

Dear Wayne:

I am shipping to you a Model 721 caliber 270 rifle #54124 which was returned to me by

Walter J. Howe
Director & Editor
National Rifle Association
1600 Rhode Island Avenue N.W.
Washington 6, D. C.

Attached is a copy of his letter indicating that the gun was returned for Leland C. Richards by Mr. John Schooley, a former President of the N.R.A., and it appears from this that in Walter's inimatable way he is putting the bite on us.

I called Walter and told him that you just can't strip the locking lugs from a 721 and would like some information pertaining to the load used and whether or not a personal injury was involved.

He stated that there was no liability involved and that he, too, had mentioned to Mr. Schooley that a real hot load caused the damage.

Would you check this rifle over thoroughly and advise me prior to APRIL 2 what you feel caused the stripping of the lugs and whether or not it can be repaired.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Re: Model 721 rifle returned by N.R.A.

If it can't be repaired, it will probably be to our advantage to replace the rifle with a 700 , and I have asked Ted McCawley or Pete Morgan to accept the charges on their accounts and write it off as a gesture of customer good will with the N.R.A.

Walter Howe wants me to go over the matter with Mr. Schooley at the N.R.A. Convention--therefore the request for a report prior to the 2nd of April, as I am leaving on the 2nd for Los Angeles.

Please call me when you have had a chance to examine the gun.

Many thanks.

Earl P.

E. G. Larson
Manager, Products Service

EGL:k

Attachment

NATIONAL RIFLE ASSOCIATION OF AMERICA

1600 Rhode Island Avenue, N.W. Washington, D. C. 20036 783-6505

[illegible] 1964

RECEIVED
MAR 17
E. G. LARSON

Mr. Earl Larson
Remington Arms Company, Inc.
Bridgeport, Connecticut

Dear Earl Larson:

By way of Railway Express Prepaid I am sending you a Remington, caliber .270 rifle, Model 721, that was brought in to me by Mr. John Schooley, the former President of NRA. John got the rifle from a Mr. Leland C. Richards of Sterling, Colorado.

Evidently something very "strong" was put in this gun and fired. There is no indication that product liability is involved, but [illegible] Mr. Schooley asked me if it is possible to repair this rifle. The stock was a total loss.

Will you please let me know what the situation is on this.

Sincerely,

Walter J. Howe, Director
Editorial & Technical Division

WJH/bjs

M/721-722 - Trigger

C-88 Copy to G.S. Hill W.A. Warren File

DON'T SAY IT — WRITE IT

cc: J.P. Linde

To E. Hooton, Jr.

Date July 5, 1979

From R.L. Hall RLH

Please file

The Plant has reviewed R & D's recommendation to repair M/721-722 Trigger Assemblies by replacing them with altered M/700 Trigger Assemblies. It is feasible to make this repair and the Plant is prepared to start upon approval of the Product Safety Committee.

RLH:cp
Attach.

SAFETY IS A WISE INVESTMENT

RD-89-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
July 2, 1979

TO: R. L. HALL

FROM: J. P. LINDE JPL

SUBJECT: REPAIR OF MODEL 721-722 TRIGGER ASSEMBLIES

I can see no technical reason for not proceeding with the R & D recommended repair procedure. To insure that the required information is available and the procedures are followed, a process engineer has been assigned the responsibility of developing the program. This will include a writeup of the repair procedure, samples and functional gages. The first samples completed will be checked by P E & C and R & D.

JPL:eb

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
May 21, 1979

TO: R. L. HALL

FROM: J. P. LINDE

SUBJECT: REPAIR OF MODEL 721-722 TRIGGER ASSEMBLIES

Research has made the following recommendations to modify a Model 700 Trigger Assembly to fit the obsolete Model 721-722:

(1) Bend finger piece on Trigger to a tighter radius so it will clear Trigger Guard. Bending fixture available in Customer Repair.

(2) Alteration to Safety Lever Assembly which requires reshaping lever to fit contour of Receiver and grinding clearance on side of safety button. Customer Repair has a bending fixture fabricated in the Model Shop and can readily alter Safety button.

(3) The Stock has to be altered in two places to provide clearance for lever operation. Minor wood removal operation.

To insure control of this modification to the Trigger Assemblies and Stock, Product Engineering will prepare a writeup, samples, and the necessary gages to perform the required operation. The writeup will also include bench testing the completed rifle for such items as Bolt Release operation, Trigger clearance, and Safety Lever clearance.

JPL:eb

RD-59 REV. 6-58

cc: R. B. Sperling

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

DUPONT

cc: J. P. Linde
Pls review design & let me know your comments.
RLH 5/11

May 8, 1979

To: E. F. Barrett

From: E. G. Larson

Ilion R. & D. has sent me a Model 721 on which they have made modification to the safety lever and button on the trigger assembly, along with wood removal in stock for clearance.

The modification looks okay to me, and John Brooks would like approval, so that suggested repair can be given to Arms Service. There are no parts available for 721-722, so we either make this repair or offer a 700 in exchange. I doubt there will be many of these models returned, and suggest the repair.

Who, other than yourself, should approve? — Production

The gun is in my office for examination.

E. G. Larson

EGL:lb

Ergo - I have asked Clark to discuss with Bob & John Linde. If they accept & approve we will proceed on this basis - notify Gene Product Committee of action taken

RECEIVED
MAY 8 1979
E.F. BARRETT

RD-69 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
DUPONT

CC: H. Carter
Copy to W A Wilson
+ E J Hilk
J. P. Linde

xc: E. F. Barrett
R. A. Partnoy
J. G. Williams
E. Hooton, Jr.
Product Safety
Subcommittee File

Bridgeport, Connecticut
July 19, 1979

HKB
R L HALL 7/20

REPAIR OF MODEL 721-722 TRIGGER ASSEMBLIES

Members of the Product Safety Subcommittee have approved the procedures recommended by Research and Development for repairing Models 721 and 722 rifles by replacing the trigger assembly with a modified Model 700 trigger assembly.

Details of the repair procedure are given in John Linde's May 21, 1979, letter to you. Copies of this letter and other relevant correspondence, including the note with Subcommittee approvals, are attached. Copies are also retained in the Subcommittee's file.

B. K. Daubenspeck
Product Safety Subcommittee
Secretary

BKD/cas

FROM: E.F. BARRETT 7/11/79

FOR APPROVAL:

~~R.A. PARTNOY~~
J.G. WILLIAMS
~~E. HOOTON~~
~~E.F. BARRETT~~

If you approve, I will ask Ben Daubenspeck to document this for the record and release the Plant to proceed.

1. B.K. Daubenspeck ~~EPB~~
2. R.L. Hall

RECEIVED
JUL 13 1979
E.F. BARRETT

DON'T SAY IT — WRITE IT

To E. Hooton, Jr.

From R.L. Hall

Date July 5, 1979

The Plant has reviewed R & D's recommendation to repair M/721-722 Trigger Assemblies by replacing them with altered M/700 Trigger Assemblies. It is feasible to make this repair and the Plant is prepared to start upon approval of the Product Safety Committee.

RLH:cp
Attach.

RECEIVED
JUL 13 1979
E. HOOTON JR.

RECEIVED
JUL 11 1979
E.F. BARRETT

RECEIVED
JUL 1[illegible] 1979
R. A. PARTNOY

SAFETY IS A WISE INVESTMENT

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
July 2, 1979

TO: R. L. HALL

FROM: J. P. LINDE JPL

SUBJECT: REPAIR OF MODEL 721-722 TRIGGER ASSEMBLIES

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JPL:eb

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
May 21, 1979

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JPL:eb

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-59 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

DUPONT

cc: J. P. Linde
Pls review design & let me know your comments.
RZH 5/10

May 8, 1979

To: E. F. Barrett

From: E. G. Larson

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The gun is in my office for examination.

E. G. Larson

EGL:lb

~~E. F. Barrett~~
Ergo - I have asked Clark to discuss with Bob & John Linde. If they accept & approve we will proceed on this basis - notify Product Service Committee of action taken
EFB

RECEIVED
MAY 8 1979
E.F. BARRETT

721 Trigger

CC: R. A. Williamson
H. J. Hackman
E. J. Mock
J. Rogers
C. Prosser
N. Thompson) In
R. B. Hurley) Turn
L. F. Mitchell

Ilion, New York
May 20, 1955

A. D. KERR (2)

M/721-722 POWDERED METAL TRIGGERS
(TEMPORARY PART NO. 18861)

The pivot pin hole on approximately five hundred (500) of these components is out of position and the parts should be scrapped. They are being held by J. Rogers in Dept. 62 pending final disposition.

These parts are from the first shipment of Powdered Metal Triggers received from the vendor in May of 1954. At that time, it was felt that the vendor would eventually be able to produce Triggers with cored holes; therefore, a temporary drill jig was made up to process "several thousand" parts but proved incapable of holding the position of the hole.

Coincidentally, the vendor notified the plant of his inability to produce the cored hole and permanent tooling was ordered. Meanwhile it was decided to finish up the pan of 500 parts to give Chem. & Met. Section a chance to experiment with the coloring process and secondly, to determine whether the Triggers might possibly be used. No coloring problem was encountered but they proved unsatisfactory on function in Assembly. (The tryout time lag was caused by M/721-722 shut-down). The material and labor costs involved are $7.14 and $2.678 per 100.

For information, a machine study was taken on the new jig and the operation classified as controllable on both diameter and position of the hole.

Process Engineering Dept.
E. Sapp

by E. J. Corcoran
E. J. Corcoran
Process Engineer

EJC/I

CC: R. A. Williamson
H. J. Hackman
E. J. Mock
J. Rogers
C. Prosser
[redacted]
L. F. Mitchell

5/23
In
Turn
5/23

Ilion, New York
May 20, 1955

A. D. KERR (2)

M/721-722 POWDERED METAL TRIGGERS
(TEMPORARY PART NO. 18861)

The pivot pin hole on approximately five hundred (500) of these components is out of position and the parts should be scrapped. They are being held by J. Rogers in Dept. 62 pending final disposition.

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Process Engineering Dept.
E. Sapp

by E. J. Corcoran
E. J. Corcoran
Process Engineer

EJC/I

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CC: J. W. Miller
R. B. Hurley
L. P. Murphy
P. B. Croop
G. Gilmartin
R. Barter
F. Byrnes
T. H. Pratt
V. G. De Reus
R. C. Gilbert

Ilion, New York
May 20, 1953

TO: M. H. WALKER

FROM: PROCESS ENGINEERING DEPARTMENT

SUBJECT: M/721-722 TRIGGER - DWG. C-19450 & C-19870

In accordance with an agreement reached at a meeting of the Process Committee on this date, we will plan to hold up the transmittal of subject drawings. These drawings cover a die-cast Trigger Blank to be finished milled and drilled at Remington.

It was the opinion of the Committee that it would be impractical for Remington to mill to a .002" limit on the sides. This decision was reached after a lengthy discussion of all types of milling and fixtures were reviewed.

At your own suggestion, we will plan to hold present drawings until such a time as you review your suggestion with the Sales Department to add a Trigger Shoe to a stamped Trigger in favor of the proposed die-cast and milled Trigger.

Process Engineering Department
E. Sapp

L. F. Mitchell
L. F. Mitchell
Process Engineer

LFM/fc

CC: R. A. Williamson
H. J. Hackman
E. J. Mock
J. Rogers
C. Prosser
N. Thompson) In
R. B. Hunley) Turn
L. F. Mitchell

Ilion, New York
May 20, 1955

A. D. KERR (2)

M/721-722 POWDERED METAL TRIGGERS
(TEMPORARY PART NO. 18862)

The pivot pin hole on approximately five hundred (500) of these components is out of position and the parts should be scrapped. They are being held by J. Rogers in Dept. 62 pending final disposition.

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Coincidentally, the vendor notified the plant of his inability to produce the cored hole and permanent tooling was ordered. Meanwhile it was decided to finish up the pan of 500 parts to give Chem. & Met. Section a chance to experiment with the coloring process and secondly, to determine whether the Triggers might possibly be used. No coloring problem was encountered but they proved unsatisfactory on function in Assembly. (The tryout time lag was caused by M/721-722 shut-down). The material and labor costs involved are $7.14 and $2.678 per 100.

For information, a machine study was taken on the new jig and the operation classified as controllable on both diameter and position of the hole.

Process Engineering Dept.
E. Sapp

ES 4/23

by E. J. Corcoran
E. J. Corcoran
Process Engineer