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Remington Arms Co., Inc. Manufacturing Process Document

Sheet 1 of 7

600 Proof Test

Operation Step Detail Operation: 600

Step Operation / Step Description

SAFETY BEFORE TEST-All Plant rules, Gallery rules and Job
Safety keypoints are to be observed at all times.

I. GUNS TO BE PROOFED

A. All guns are to be proofed 100% after final assembly and prior to
function testing.

1. Use special remote operated steel covered proofing device and
approved booths only. (DO NOT PROOF RIFLES IN SHOTGUN PROOF BOOTHS)

II. PROOFING OBJECTIVE

A. To test each guns ability to withstand the proof round pressure
without damage to the gun or distortion of the proof round.

III. SAFETY

A. Water tanks are to be inspected each shift before shooting is
started and inspection sheet is to be signed. (Refer to General
Gallery Safety Rules, Section K.)

B. All assembled guns are to be stored with the action open and the
safe in the "S" or "on" position.

Printed on:
8/17/2010

Remington Arms Co., Inc. Manufacturing Process Document

Sheet 2 of 7

IV. DESCRIPTION AND SEQUENCE OF PROOF TEST

A. Preliminary Inspection-Each gun prior to proof:

1. No more than two different calibers per truck load.
2. Inspect all rifle bores for obstruction with rod.
 - a. Use nylon or brass rod (make sure action is open before inserting rod).
 - b. Insert into muzzle until rod is clearly visible through ejection port.

B. PROOF TEST

NOTE: The first rifle proofed is to be left off of the truck so there will be an open space between tested and untested guns. Place first gun back on truck when the entire load has been completed.

1. Pick up first gun from truck and inspect for:
 - a. Ammunition - Inspect chamber and magazine-both must be empty.
 - b. Caliber - To verify for shooting safety.

Note: If the load has two different calibers on it, place a red tag on the muzzle end of one gun on the truck to alert the testers and targeters of this condition.

- c. Magnaflux Triangular Stamp-Must be present on right rear side of Barrel.
- d. Check for Firing Pin Protrusion or Foreign material at Face of Bolt:
 1. Firing Pin must be retracted in the Bolt.
 2. Bolt Face and Shroud must be free from any foreign material.

Printed on:
8/17/2010

Remington Arms Co., Inc. Manufacturing Process Document

Sheet 3 of 7

NOTE: Visually check the first gun from each side of the truck for obvious visual defects before and after proof test.

2. Move the Safe to the "OFF"(F) position. Open and close the bolt forcibly 3 times. The Firing Pin must not follow down.
3. With action open and the Safe in the "OFF"(F) position, place assembled gun in proofing jack - muzzle in port.
4. Load one (1) proof round into chamber of barrel and close the bolt.
5. Close protective steel doors of proofing device.
 - a. Closing of left hand door must activate air cylinder which clamps stock into fixture.
 - b. The stops on both doors must contact both relays to activate firing mechanism.
6. PULL large knob on side of proofing device and hold (to position triggering mechanism in fixture).
7. Push firing button on side of proofing device (to operate triggering mechanism).
8. If gun fails to fire, repeat procedure 6 & 7 listed above. If gun fails to fire second time, wait one (1) minute before opening steel doors to remove shell.
 - a. Inspect unfired shell for firing pin indent. If indent appears sufficient to fire round, load another proof round and repeat procedures 4,5,6 & 7.
 - b. If gun fails to fire, wait one (1) minute before removing shell.
 - c. Place safe in "S" or "on" position, remove gun from proof jack and enter gun information and reject in computer.

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 4 of 7

9. After firing, open doors of proofing device and retrieve fired case.
10. Check fired case for:
 - a. Primer indent-must be sufficient to fire round.
 - b. Possible ruptures-must not be ruptured or swelled.
 - c. Rings or roughness-slight rings are permissible - Rub fingernail over ring. If ring is large enough pick with nail, reject the gun.

NOTE: If primer blows out of the primer pocket or is pierced, complete sequence 11 and 12 (below) and then check receiver of gun for primer or the piece of the pierced primer. If primer or piece of primer can be found, remove it and pass the gun. If primer or piece of primer can't be found, enter gun information and reject code in computer, place reject ticket in envelope and place the gun on truck.

11. Move Safety to "S" or "on" position before removing gun from proofing device.
12. Inspect chamber and magazine for live ammunition before removing gun from port.
 - a. Chamber must be empty.
 - b. Follower must be visible.
13. Remove gun from device and place on bench.
14. Stamp proof mark (REP), right rear side of Barrel ON ACCEPTABLE PRODUCTS ONLY.
 - a. Stamp prick punch on the underside of the bolt handle, in addition to the proof mark on the Barrel.
15. If gun fails proof test - enter gun information and reject

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 5 of 7

code into computer. Attach reject ticket to gun.

16. Place gun back on truck.

17. Repeat test on next and succeeding guns.

V. INTERPRETATION OF PROOF TEST

A. PASS GUN

1. If there is no failure at proof.
 - a. Gun must be free of defects. (Not broken, cracked, split, chipped, deformed or show stress marks)
2. If fired case is within visual specifications as outlined in Item IV-B10 (above)
3. If there are no serious visual defects found on wood or metal surfaces of the gun.

B. REJECT GUN

1. If gun has part breakage or action will not open.
2. If fired case fails to meet visual specifications.
3. If any serious visual defects are found before or after test.

VI. SAFETY AFTER PROOF TEST

A. SAFETY

1. Move Safe to "S" or "ON" position before removing gun from shooting device.

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 6 of 7

2. Place the first gun proofed back onto the truck after complete load has been proofed.

B. INSPECT CHAMBER AND MAGAZINE FOR LIVE AMMUNITION

1. Chamber must be empty.
2. Follower must be visible.
3. Check chamber and follower on all guns upon completion of proof test.

C. VISUALLY INSPECT FOR MARRING BY DEVICE OR PORT

1. Take first (1st) gun from each side of the truck, after proof test, and carefully check gun for possible damage from the jack or port.
 - a. If any damage is found, stop testing and have the cause of damage corrected.
 - b. Resume testing only after correction has been made.

D. MOVE ENTIRE LOAD TO NEXT OPERATION

1. The Model 700 rejects will stay on the original truck when moved to the next operation (Test and Target).

PROCESS CONTROL INSPECTION RECORD THIS RECORD MUST STAY WITH THE PRODUCTION ORDER AT ALL TIMES		Revision Date: 20-Jul-10		Processed by:	
Part No:	Part Name: FIN ASSY 700 XCR	C/F		Date: 8/17/2010	
Operation No: 600	Operation: Proof Test			Work Center:	
Prod. Qty:	Prod. Order #:	Operator	Setup inspected by & Date:		

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 7 of 7

Gage Description and Characteristic	Gage Number	Gage Frequency	1st Shift	2nd Shift	3rd Shift	Remarks, Causes, Action Taken, Etc.
VISUAL	VISUAL	100%	INSPECT			
			REJECT			
			INSPECT			
			REJECT			
	Pieces Run:					Remington Arms Company, Inc. -- Ilion, New York

Printed on:
8/17/2010

Remington Arms Co., Inc. Manufacturing Process Document

Sheet 1 of 11

606 Test and Target

Operation Step Detail Operation: 606

NOTE: Rechamfer muzzle on all rifles on each load BEFORE targeting to insure that the bullet exits the barrel in a smooth chamfer that is concentric and perpendicular to the bore. The chamfer must be deep enough to apply a .020 minimum break at the bore's edge and clean up any deformity at the end of each rifiling land. Chamfering must be done with the piloted tool listed in the tool section.

Step Operation / Step Description

NOTE: TARGET - THESE GUNS ARE TARGETED 100%

Gallery Test-Procedure and Specifications

Safety before Test: All plant rules, gallery rules and job safety key points are to be observed at all times.

I. RIFLES TESTED AND TARGETED

- A. All rifles (100%) are to be tested after proof.
- B. Record results of testing in computer as test and target operations are performed.

II. TEST AND TARGET OBJECTIVES

- A. Function: To check the ability of each rifle to satisfactorily

Printed on:
8/17/2010

Remington Arms Co., Inc. Manufacturing Process Document

Sheet 2 of 11

load, feed, close, lock, fire, unlock, open, extract, eject and for proper operation of the Safety.

- B. Accuracy: To check the ability of each rifle to satisfactorily meet specifications for point of impact and/or group size.
- C. Visual: To check the ability of each rifle to satisfactorily meet appearance specifications for front and rear sights and general overall presentability.

III. SHOOTING JACKS AND DEVICE

- A. When performing an accuracy evaluation on a rifle use the accuracy device.
 - 1. Adjust and set device with master rifle if the caliber and model to be shot is produced with iron sights.
 - 2. Use 1" by 1" grid type targeting paper.
- B. When performing a function test, either the accuracy device or a centerfire shooting jack can be used.
 - 1. If a shooting jack is used, complete function test on entire truck. Then push the truck back to an accuracy device to target (100%).

IV. DESCRIPTION OF TEST AND TARGET PROCEDURES AND SPECIFICATIONS:

NOTE: The first rifle tested and targeted is to be left off of truck so there will be an open space between tested and untested rifles. Place first rifle back on truck when the entire load has been completed.

- A. Test/Target Description
 - 1. Pick up rifle from truck and inspect for:
 - a. Live Ammo - Inspect chamber and Magazine-both must be empty.

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 3 of 11

- b. Caliber - To verify for shooter personal safety in selecting ammunition for test.
- c. Proof mark on Barrel - (REP) must be present, right rear side of barrel, ahead of Magnaflux stamp.
- d. Proof mark on Bolt - (.) Prick punch mark must be present at bottom of Bolt Handle.
- e. Visual Defects - Marring of wood or metal finishes.

If not within specifications for items a-e above, reject guns at this point.

- 2. With safety in "F" or "OFF" position-close Bolt crisply on empty chamber. Rifle must be pointed in safe direction at all times.
 - a. Firing pin must not follow down as Bolt cams shut.
 - b. Must not fire on closings.
- 3. With Safety in "S" or "on" position and the action closed, raise the bolt.
 - a. Bolt must raise or open without excessive force.
- 4. Close Bolt with safety in "S" or "on" position - pull trigger firmly.
 - a. Rifle must not fire
- 5. With finger off Trigger-move safety to "F" or "OFF" position.
 - a. Rifle must not fire.
- 6. Open and close Bolt full stroke to cock firing pin.
- 7. Move Safety to full rear "S" or "ON" position and then move

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 4 of 11

half way to the "F" or "OFF" position with thumb.

8. If safety stops at half-way position-pull trigger.

- a. Rifle must not fire.
- b. Safety must not move to full "OFF" position.

9. If safety stops in halfway position, move safety to "F" or "OFF" position after pulling trigger.

- a. Rifle must not fire.

IMPORTANT-Perform Items 2-9 above, a total of three (3) times per gun.

10. Move safety to "S" or "ON" position.

NOTE: Steps 11-12 pertain to guns being tested on accuracy device.

11. With Action open, position rifle in device and clamp.

12. For first rifle of a new caliber remove the bolt and look through bore to line up device with paper.

- 13. Load Magazine to capacity: (see chart below)
 - a. Magazine must accept only the number of rounds specified.
 - b. Cartridges must be retained by rails in receiver.

CALIBER	AMMUNITION TYPE	MAG. CAP
1. 270 WSM	180 gr.PSPCL	3
2. 300 WSM	180 gr.POWER PT.	3
3. 270 Win.	150 gr. SPCL	4
4. 30.06 SPRG.	150 gr.PSPCL- 180 gr.SPCL	4
5. 7mm Rem. Mag.	175 gr. PSPCL	3
6. 300 Win. Mag.	180 gr. PSPCL	3

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 5 of 11

7.	338 WIN. MAG.	250 gr.PSP	3
8.	375 H&H MAG	300 GR. SP	3
9.	7mm REM. ULTRA MAG.	175 gr.PSPCL	3
10.	300 REM. ULTRA MAG.	180 gr.PSPCL	3
11.	338 REM. ULTRA MAG.	250 gr.PSPCL	3
12.	375 REM. ULTRA MAG.	270 gr.HPS	3

14. Hold cartridges down in Magazine, start Bolt over Cartridge column and close Bolt on empty chamber.

a. Bolt must close over full magazine with normal pressure.

15. Open Bolt full stroke to rear position.

16. Close guard.(If on accuracy device)

17. Close Bolt to feed shell into chamber and lock to start test.

a. Must feed single (1) shell with each operating stroke of Bolt.

b. Must not double feed.

c. Shells must not stem chamber or magazine. (Bind inside receiver or barrel.)

d. Bolt must not override shell in magazine.

e. Bolt must feed shell into chamber with normal pressure.

f. If, using normal force, the Bolt will not close over a live round in the chamber, perform the following test:

1. Insert the appropriate close hard plug into the chamber while the rifle is held in the test device. (see Tool Detail Section for list of close hard plugs)

2. Close and operate bolt:

a. If bolt closes hard over the plug, reject the rifle for Close Hard and record the malfunction in the

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 6 of 11

- computer and attach the slip to the rifle.
- b. If bolt closes with normal pressure, do not reject the rifle. This indicates oversize ammunition.
18. Move safety to "F" or "OFF" position.
19. If using accuracy device fire rifle by pushing (2) two buttons on device simultaneously. If using shooting jacks, grip rifle in normal manner and pull trigger with finger.
20. For the 10% of standard rifles and 100% of Police rifles that are targeted, check each shot with spotting scope for rifle "seating in" and position of shots on paper. Use a maximum of 3 "seater" rounds per rifle.
- a. Adjust device if shots off paper or group too close to edge.
21. Operate action full cycle to extract, eject, and feed each shot.
- a. Bolt should not pull out of receiver.
- b. Case or shell must be retained by extractor until the case is ejected from receiver.
- c. Case must be completely ejected from receiver, should not catch on receiver.
- d. One fired case from each rifle must be visually inspected for firing pin indent and chamber marks reflected on case. Slight rings are permissible; if ring is large enough to pick with fingernail, reject the rifle.
22. Fire all rounds required for Test and Targeting.
- a. For the Test procedure, each rifle is to have the first two (2) rounds fired and the remaining rounds cycled through but not fired.

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 7 of 11

- b. For the Target procedure, all accuracy specifications are based on groups consisting of 3 to 5 shots, therefore, those rifles will typically require extra rounds to be loaded and shot singly. See chart below for acceptable group sizes.

23. Open guard. (If on accuracy device)

24. For the Targeted rifles (10% std. & 100% Police)

- a. Use spotting scope to check group size.
b. Maximum spread of the two extreme holes must be within group size specifications listed below.

GROUP SIZE SPECIFICATIONS

A. FIELD GRADE RIFLES - (ADL,BDL,DM,CLASSIC)

CALIBER	AMMUNITION TYPE	MAX. GROUP CENTER TO CENTER		
		3 SHOT	4 SHOT	5 SHOT
1. 270 WSM	180 gr.PSPCL	2.5	3.0	3.5
2. 300 WSM	180 gr.POWER PT.	2.5	3.0	3.5
3. 270 Win.	150 gr. SPCL	1.7	2.2	2.7
4. 30.06 SPRG.	150 gr.PSPCL- 180 gr.SPCL	1.7	2.2	2.7
5. 7mm Rem. Mag.	175 gr. PSPCL	2.5	3.0	3.5
6. 300 Win. Mag.	180 gr. PSPCL	2.5	3.0	3.5
7. 338 WIN. MAG.	250 gr.PSP	2.5	3.0	3.5
8. 375 H&H MAG	300 GR. SP	2.5	3.0	3.5
9. 7mm REM. ULTRA MAG.	175 gr.PSPCL	2.5	3.0	3.5
10. 300 REM. ULTRA MAG.	180 gr.PSPCL	2.5	3.0	3.5
11. 338 REM. ULTRA MAG.	250 gr.PSPCL	2.5	3.0	3.5
12. 375 REM. ULTRA MAG.	270 gr.HPS	2.5	3.0	3.5

25. Unclamp and remove rifle from device. (If on accuracy device)

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 8 of 11

26. Inspect chamber and magazine for live ammunition.
 - a. Chamber must be empty.
 - b. Follower must be visible.
27. Pass all rifles that meet specifications for:
 - a. Visual
 - b. Functional
 - c. Group size
28. Reject all rifles that do not meet specifications:
 - a. Enter all malfunctions into the computer and place ticket on rifle.
 - b. If a rifle fails to meet the target group size specifications, reject that rifle and target all remaining rifles on that side of the truck. If another rifle fails to meet group specifications, target the entire load.
29. Place rifle back on truck.
30. Repeat Test on next and succeeding rifles.
 - a. Randomly select 10% (Std. Rifles) and Target.
 - If 30 rifles are on a truck, target 3
 - If 21 rifles are on a truck, target 3
 - If 20 rifles are on a truck, target 2
 - b. Target Police 100%

V. SAFETY AFTER TEST

- A. Open Bolt

Printed on:
8/17/2010

Remington Arms Co., Inc. Manufacturing Process Document

Sheet 9 of 11

1. Move Bolt to open position before removing rifle from accuracy device.

B. Inspect Chamber and Magazine for live ammunition.

1. Rifle must be empty.
2. Follower must be visible.

NOTE: Perform "A" & "B" above on each individual rifle immediately after shooting test. Repeat "B" for all rifles on truck at completion of test.

C. Visual Inspect for marring by device or port.

1. Check all rifles from each side of truck, after test, and check for any possible damage to rifle from the test.

D. All rifles are moved to Ammunition Inspection Area.

Operation Tool Detail

Operation: 606

Muzzle Chamfer Tools

B-73740	Countersink Tool with "T" handle
B-51634-W	Countersink Pilot - 30 caliber (all)
B-51634-V	Countersink Pilot - 270 Win
B-51634-U	Countersink Pilot - 25-06 Rem
B-51634-T	Countersink Pilot - 22 caliber (all CF)
B-51634-S	Countersink Pilot - 35 caliber (all)
B-51634-R	Countersink Pilot - 22 caliber (all R?)
B-51634-Q	Countersink Pilot - 6mm Rem / 243 Win
B-51634-P	Countersink Pilot - 7mm (all) / 280 Rem
B-51634-N	Countersink Pilot - 264 Win / 6.5mm (all)
B-51634-M	Countersink Pilot - 8mm Rem Mag

Printed on:
8/17/2010

Remington Arms Co., Inc.
Manufacturing Process Document

Sheet 10 of 11

B-51634-L Countersink Pilot - 338 (all)

Tool Number	Tooling Description	
Std	CALIBER	USE CLOSE HARD PLUG
	7mm REM.MAG., 338 WIN.MAG.	C-46200-B OR D-46200-B
	300 WIN. MAG.	C-46200-A OR D-46200-A
	30.06 SPRG.	C-45930 OR D-48349-J
	270 WSM.	D-48349-BB
	300 WSM.	D-48349-DD
	270 WIN.	D-48349-J
	375 H&H	D-46200-D
	7mm REM. ULTRA MAG.	D-48349-V
	300 REM. ULTRA MAG.	D-48349-T
	338 REM.ULTRA MAG.	D-48349-U
	375 REM.ULTRA MAG.	D-48349-W

(Close Hard Plug Storage Cabinet is D-46202)

PROCESS CONTROL INSPECTION RECORD THIS RECORD MUST STAY WITH THE PRODUCTION ORDER AT ALL TIMES			Revision Date: 20-Jul-10			Processed by:	
Part No:		Part Name: FIN ASSY 700 XCR		C/F		Date: 8/17/2010	
Operation No: 606		Operation: Test and Target					Work Center:
Prod. Qty:		Prod. Order #:		Operator		Setup inspected by & Date:	
Gage Description and Characteristic	Gage Number	Gage Frequency	1st Shift	2nd Shift	3rd Shift	Remarks, Causes, Action Taken, Etc.	
VISUAL	VISUAL	100%	INSPECT				
			REJECT				
			INSPECT				
			REJECT				

Remington Arms Co., Inc.
Manufacturing Process Document

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8/17/2010

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