Method of Rifling by Manufacturer

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Keywords: Broach, button, electrochemical, hammer forged, rifling manufacture

ABSTRACT

A list of manufacturers and their method of rifling was compiled for particular models/calibers. Percentages for the different methods of manufacturing rifling were calculated from the list of manufacturers that were contacted and the "Annual Firearms Manufacturing and Export Report" for the year 2007.

Introduction

During training in the Firearms/Toolmark field, examiners are required to learn the different methods of barrel rifling. The broach, button, hammer forged, electrochemical (ECR), hook, and scrape methods are studied. The two most common methods used by manufacturers are broach and button. It may be important to know the rifling method in a particular firearm barrel for court testimony. A basic list of the make, style, and method of rifling manufacture was compiled.

Method

Articles previously published in the AFTE Journals and communications with the manufacturers of the firearms were used to determine the methods of rifling to compile this list.

Results

A list of the make, model, caliber, type, and the method of rifling manufacture is in Table 1. This list is not all inclusive. There are many firearms manufacturers that have gone out of business or the manufacturer is international and contact information is not readily available and/or inaccurate. Between the previously published AFTE articles and contacting current manufacturers, over 50 different companies are listed in the table. Some of the companies listed in this table use different rifling techniques for different models/calibers/types. The manufacturing method for the rifling of any of these manufacturers may change at any time and this method of manufacturing may not have been used previously. Thirty-three of the companies listed in this table were either contacted by telephone or emailed. The responses listed in this table are the responses that were given and no information is known as to how informed the respondent was when giving the response.

Date Received: October 14, 2010
Peer Review Completed: November 10, 2010

Table 2 was compiled using information from the "Annual Firearms Manufacturing and Export Report" published by ATF for the year 2007 and the data from Table 1 to show the number of firearms manufactured using the different methods of rifling (48). Here is a summary of the results for 2007:

- Eleven companies (36.6% of the firearms) used the broach method

- Sixteen companies (39.1% of the firearms) used the button method

- One company (10.6% of the firearms) used the electrochemical method

- Seven companies (13.7% of the firearms) used the hammer forged method.

Eight of the companies surveyed in this study (Beretta, Colt, Marlin, Phoenix Arms, Remington, Ruger, Smith & Wesson, and Sig Sauer) used different rifling methods within the same company to manufacture different types of firearms.

A list of over 50 different companies that manufacture firearms was compiled. While this list does not cover every firearm that could be encountered in a crime lab, it does cover a wide range of firearms often examined in crime labs today. This article could be used as a reference to determine the rifling method of a firearm for an upcoming trial. It also verified that the two most common methods of manufacture are the button and broach method. These two methods, combined, accounted for over 75% of 1.7 million firearms imported/manufactured in the United States in 2007, identified in Table 2.

Acknowledgments

The author would like to thank the Kansas City, MO Police Dept. Firearms Section and the Maryland State Police Dept. for allowing the time to perform this study.

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Table 1

Make	Model/Caliber/Style	Method of Manufacture	Reference
Accu-Tek	all barrels	broach	51
Arms Corp.	all barrels	button	1
Auto-Ordnance	all barrels	broach	2
Bauer	.25 Auto	broach	3
Beretta	.22, .25, .32	button	4
Beretta	larger calibers	broach	4
Bersa/Firestorm	all barrels	button	5
Browning/Winchester Rpting Arms	Winchester barrels-US	button	6
Browning/Winchester Rpting Arms	Browning-Japan	hammer forged	6
Bushmaster	majority of barrels in all calibers	button	7
Bushmaster	5.56/.223 barrels (started 2009)	hammer forged	7
Calico	all barrels	broach	8
Charles Daly	1911 & Daly M-5 made in Phillippines by Armscor	button	1
Charter Arms	all barrels	broach	49
Cobra	all barrels	broach	9
Colt	pistol	broach	10 & 11
Colt	rifle	button	10 & 11
Colt	.45	scrape	12
Cooey		broach (gang)	13
Coonan	.357 Magnum	electrochemical	14
Coronet Mfg. Company		button and cut broach	15
CZ	all barrels	hammer forged	16
DPMS-Panther	all barrels	button	17
Detonics	all barrels	broach	52
Eddy		broach	18
Glock	all barrels	hammer forged	19
Fabrique Nationale	all barrels	hammer forged	20
H & K	USP (Before 1994)	broach (cut rifled)	21
H & K	P9S and USP (After 1994)	hammer forged	21
H & R	all barrels	hammer forged	22
Heritage	all barrels	button	23
High Std./AMT	all barrels	hammer forged	24
Hi-Point	all barrels	button	25
Jimenez Arms	all barrels	broach	26
Kahr	all barrels	broach	2
Keltec	all barrels	button	27
Kimber	all barrels	button	28
Lorcin	380 Auto	button	29
Magnum Res	Mountain Eagle	button	30
Marlin	Glenfield 60,512,MR7 rifle	broach	11
Marlin	microgroove	button	11
Maverick Arms/Mossberg	all barrels	broach	31
North American Arms	.22 and .380	button broach	32
Olympic Arms	Standard barrels-all have 6 lands/grooves	button	27
Para Ordnance	all barrels	broach (hot)-"forged cutbroach"	34

Table 1 continued

Make	Model/Caliber/Style	Method of Manufacture	Reference
Phoenix Arms	.22 caliber	button	35
Phoenix Arms	.25 caliber	broach (cut)	35
Raven	.25 Auto(P-25)	broach (two broaches)	36
Remington	770	button	37
Remington	most firearms	hammer forged	37
Remington	5-R Mil Spec	hammer forged	37
Ruger	semi auto centerfire pistols & 9mm P85	broach	38 & 39
Ruger	LCP barrels	broach	38
Ruger	.22 semi auto barrels	button	38
S & W	9mm, .40 & .45 Sigma pistols, Sports series, model 41	broach (cut)	11 & 40
S & W	.22 revolvers	broach (cut)	40
S & W	Walther PPK, PPKS	button	40
S & W	revolvers (other than .22) since 1995	electrochemical	11 & 40
Savage	other	button rifled	11
Savage	.32-20	hook	13
Shilen	DGA	button swaged	41
Sig Sauer	pistols	broach	42
Sig Sauer	German barrels (ie SSG3000 rifle & Tac 2000)	hammer forged	42
SKYY/SCCY	9mm	broach	43
Springfield	Springfield 1911	hammer forged	44
Springfield	M1	hammer forged (hot)	11
Sterling	.22 caliber, .25 Auto, .380 Auto, & .32 Auto- S/A pistols	button	45
STI	all barrels	button	50
Taurus	all barrels	button	46
Thompson Ctr	all barrels	button	47
Wilson Arms	Ruger Blackhawk (since before 1997)	hook	11
U.S. Repeating Arms		hammer forged (cold)	11

Table 2

Make	State	Model/Caliber/Style	Method of Manufacture	Number Produced(2007)		
Accu-Tek	CA	all barrels	broach	1343		
Auto-Ordnance/Kahr	MA	all barrels	broach	26166		
Beretta	MD	larger calibers	broach	47520		
Charter Arms	CT	all barrels	broach	14294		
Cobra	UT	all barrels	broach	36396		
Colt	CT	pistol	broach	17833		
Jimenez Arms	CA	all barrels	broach	21977		
Maverick Arms/Mossberg		all barrels	broach	38570		
Phoenix Arms	CA	25 caliber	broach (cut)	2232		
Ruger	AZ	semi auto centerfire pistols/LCP barrels	broach	65786		
S & W	MA	9mm, 40 & 45 Sigma pistols, Sports series, model 41	broach (cut)	256988		
S & W	MA	22 revolvers	broach (cut)	7223		
Sig Sauer	NH	pistols	broach	111653	**Total**	**Percent**
SKYY/SCCY	FL	9mm	broach	5420	652058	36.6
Beretta	MD	.22, .25, .32	button	40111		
Bushmaster	AZ	majority of barrels in all calibers	button	2679		
Bushmaster	ME	majority of barrels in all calibers	button	518		
Colt	CT	rifle	button	11138		
DPMS-Panther	MN	all barrels	button	58674		
Heritage	FL	all barrels	button	39352		
Hi-Point	OH	all barrels	button	121240		
Keltec	FL	all barrels	button	111864		
Kimber	NY	all barrels	button	66122		
Magnum Research	MN	.22 Mountain Eagle	button	108		
North American Arms	UT	.22 and .380	button broach	33394		
Olympic Arms	WA	Standard barrels-all have 6 lands/grooves	button	8174		
Phoenix Arms	CA	22 caliber	button	8768		
Ruger	AZ	22 semi auto barrels	button	74477		
Ruger	NH	22 semi auto barrels	button	1754		

Table 2 continued						
Make	**State**	**Model/Caliber/Style**	**Method of Manufacture**	**Number Produced(2007)**		
S & W	ME	Walther PPK, PPKS	button	45635		
STI	TX	all barrels	button	7157		
Taurus	FL	all barrels	button	9850	**Total**	**Percent**
Thompson Ctr	NY	all barrels	button	56939	697954	39.1
S & W	MA	revolvers (other than 22) since 1995	electrochemical	189032	189032	10.6
CZ	NY	all barrels	hammer forged	2424		
Fabrique Nationale	SC	all barrels	hammer forged	18889		
Glock	GA	all barrels	hammer forged	61703		
High Std./AMT	CT/TX	all barrels	hammer forged	1225		
Remington	NC	most firearms/5R Mil-Spec	hammer forged	122580		
Sig Sauer	NH	German barrels (ie SSG300 rifle & TAC 2000)	hammer forged	8236	**Total**	**Percent**
Springfield	IL	Springfield 1911	hammer forged	29363	244420	13.7
			Total	1783464		