

This collection of fountain pen measurements began back in 2002 when, innocently enough, I decided to measure the lengths of a few pens to satisfy my curiosity on a couple of points. But as with many aspects of pen collecting, a simple start evolved into something much more elaborate. Quick, rough estimates with a cheap ruler were replaced by slow, careful measurements with more precise tools. It wasn't long before it occurred to me that by adding some weight measurements, I could produce a useful supplement to Pentrace's Bureau of Weights and Measures (BoWaM). And in time, I realized that I could surpass BoWaM both in terms of number of pens, and in depth of information provided.

This version (early October 2006) of the collection has measurements on 204 fountain pens from 26 different manufacturers, with production dates ranging from about 1895 through 2005. There are 11 physical measurements (three lengths, four diameters, two weights, and two centers of gravity), plus three more values derived from the physical measures. There is also one educated guess based on the physical measures. The data are presented in the form of a table with values in metric units (millimeters, grams, cc). In addition, the data table has a graph for (nearly) every pen, showing how that pen compares to the other pens in this collection on 14 quantifiable attributes. Formerly, there was also a data table with values in English units (inches and ounces); that table has been replaced with a set of rulers that perform conversions to the same resolution as the original English units table.

The next few sections describe the pen measurements and characteristics that are presented in the data table. Details of the measurement procedures are given in a later section. To skip ahead, click a link below:

- [The metric units data table](#)
- [Rulers for converting between English and metric units](#)
- [Details of measurement procedures](#)
- [A guess at an attribute that makes a pen *look* big](#)
- [Statistical graphs of a dozen pen attributes](#)

Descriptive Data

In addition to measurements, the data table contains some descriptive information about the pens — brand name, year of manufacture, materials used, etc. Here's a quick summary of what's available, along with explanations of some abbreviations used in the table.

Year This is the date of manufacture, often approximate, but extracted from imprints and design features where possible. For many pens, this is just a typical year when the pen might have been made, e.g., 1925 for a red ripple Waterman 52.

Filler The method used to fill the pen. Proprietary terms (e.g., Vacumatic) are used where pertinent. Some abbreviations:

C/C = cartridge/converter, ED = eyedropper, TD = Touchdown.

Finish The principal material(s) that form the visible part of the pen. Proprietary terms (e.g., Radite) are occasionally used, but often the terms are generic (e.g., resin or plastic). Some abbreviations:

BHR = black hard rubber, BCHR = black chased hard rubber, DJ = double jewel,
RHR = red hard rubber, RRHR = red ripple hard rubber, RMHR = red mottled hard rubber,
GF = gold filled, GP = gold plated, SG = solid gold, SS = sterling silver, ss = stainless steel,
NP = nickel plated, CP = chrome plated, RP = rhodium plated.

Details Sundry and occasional information about a pen, perhaps included because it might be related to the pen's weight or center of gravity — e.g., does the cap have a clip? (Note: *clipless* here means 'never had a clip', not 'clip has been lost or removed'.) But the details sometimes include a reference to some well-known book on fountain pens, as a means of identification.

Some pens have a clear model designation that makes them easy to identify; a Sheaffer PFM II might be an example. Other pens appear to have no such widely recognized model name or number; many gold-filled overlay pens from the 1920's are in that category. When possible and perhaps helpful, the data table may contain a reference to a photo or graphic found in one of these books:

Erano, P. *Fountain Pens, Past and Present*, 2nd Edition. Collector Books, 2004. (fpPP2)

Fischler, G., & Schneider, S. *Fountain Pens and Pencils: The Golden Age of Writing Instruments*, 1st Edition. Schiffer Publishing, 1990. (fpGA1)

Lambrou, A. *Fountain Pens of the World*, 1st Edition. Classic Pens, 1995. (fpW1)

Lambrou, A. *Fountain Pens: United States of America and United Kingdom*, Pendemonium, 2000. (fpUS)

To illustrate, the entry fpPP2/177 BJ3502 points to p. 177 of Paul Erano's second edition. There, in a reproduction of a Waterman advertisement, is a pen with catalog code BJ3502 — the exact pen that I measured. 'Exact' here ignores irrelevant differences (say, color); specifically, the pen I measured has nickel plated trim, not gold trim.

Physical Measurements

The data table provides measurements of 11 physical characteristics of a fountain pen. Here is a list of definitions, along with the terse symbol (e.g., LPn) used to identify the measurement in the table:

LPn *Length of Pen*: Length measured from the tip of the nib to the end of the barrel.

LCp *Length Capped*: Length measured with the cap in place, from the end of the cap to the end of the barrel.

LPs *Length Posted*: Length measured from the tip of the nib to the end of the cap, with the cap in posted position.

DBa *Diameter of Barrel*: Maximum diameter of the barrel, excluding minor ornamentation (e.g., the decorative bands on some Waterman eyedroppers). However, for pens with a full or nearly full overlay (e.g., a Waterman 452) the diameter is of the overlay, not of the underlying (hard rubber) barrel.

DTh *Diameter at Threads*: Diameter of the outside of the cap threads on the barrel, if any. (This measurement is absent if the cap threads were.)

D38 *Diameter at 38 Millimeters*: Diameter of the pen measured at 38mm (1.5in) above the tip of the nib. (This is where I happen to grip a pen while writing.)

D25 *Diameter at 25 Millimeters*: Diameter of the pen measured at 25mm (1.0in) above the tip of the nib. (This might be closer to where some others grip a pen.)

WPn *Weight of Pen*: Weight of the pen without cap. Weights were taken with no ink loaded; C/C fillers were weighed with the empty cartridge or converter onboard.

WCp *Weight of Cap*: Weight of the cap alone.

CGu *Center of Gravity, Uncapped*: The balance point (center of gravity) of the pen alone, measured as distance from the tip of the nib. (Same conditions as for weight measurements.)

CGp *Center of Gravity, Posted*: The balance point (center of gravity) of the pen with the cap in posted position, measured as distance from the tip of the nib. (Same conditions as for weight measurements.)

Derived Attributes

The data table provides values for four attributes defined in terms of the physical measurements:

PsCp *Posted Length, Relative to Capped Length* (i.e., LPs / LCp) so that 1.25 means a pen is 25% longer when posted than when capped. This aims to capture a property of some pens (e.g., Pelikan 100) whose posted lengths seem surprising given their capped lengths.

CgPn *Relative Center of Gravity, Uncapped* (i.e., CGu / LPn), the center of gravity expressed as a fraction of the uncapped pen's length. So, 0.55 means that to reach the center of gravity starting from the tip of the nib, you must travel 55% of the length of the uncapped pen. This is an attempt to capture the tendency of some pens to feel top-heavy when uncapped.

CgPs *Relative Center of Gravity, Posted* (i.e., CGp / LPs), the center of gravity expressed as a fraction of the posted pen's length. So, 0.55 means that to reach the center of gravity starting from the tip of the nib, you must travel 55% of the length of the pen with cap in posted position. This is an attempt to capture the tendency of some pens to feel top-heavy when posted.

VBa *Volume of Barrel, approximated* by pretending the pen's barrel is a perfect cylinder. This is the educated guess mentioned above; it aims to capture some of the tendency of a pen to *look big*.

Precision of Measurements

The data table reports the physical measurements rounded to some nearest multiple of the relevant unit. Here are those multiples:

Lengths: 1mm (0.05in)

Diameters: 0.1mm (0.005in)

Weights: 0.25g (0.01oz)

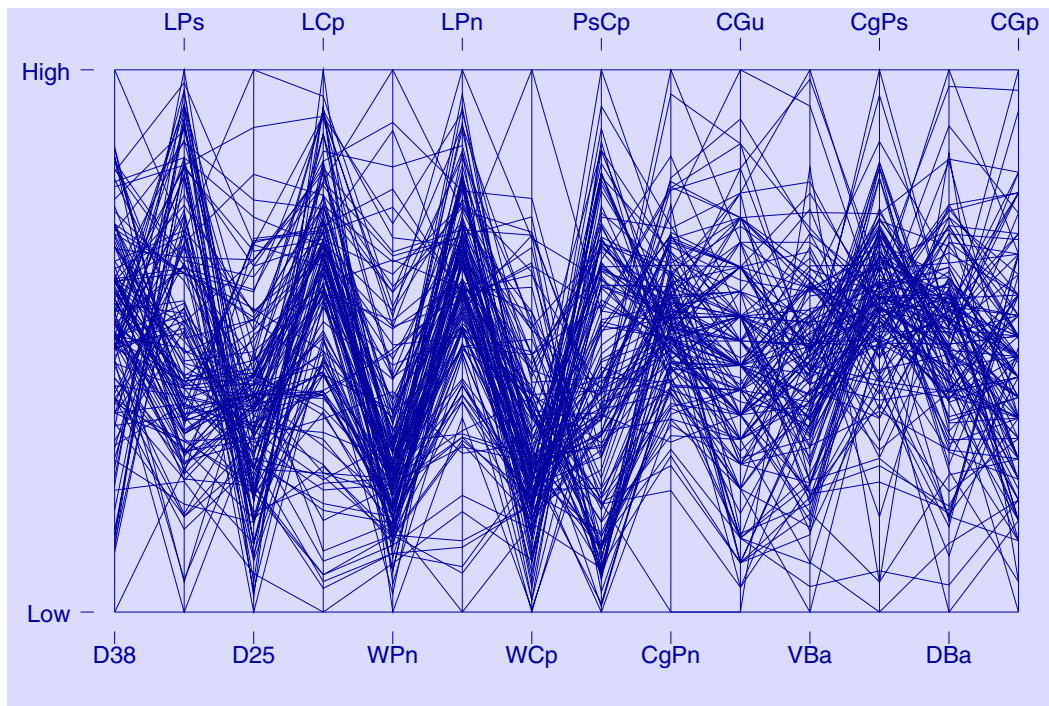
Centers of Gravity: 2.5mm (0.1in)

(Parenthesized values show the resolution of the former English units table, and also of the [conversion rulers](#).) In all cases, the actual measurements were made to greater accuracy than reported. For example, lengths were measured to an accuracy of at least 0.5mm, but the data table shows them rounded to the nearest multiple of 1mm. The derived attributes are unit-free, except for VBa which is shown rounded to the nearest 0.5cc (mL). For details of the measurement procedures or of the approximation used for VBa , click a link below:

- [Details of measurement procedures](#)
- [Estimating barrel volume](#)

Visualizing the Data

The data table contains 15 numerical values for most pens. Well, perhaps 14 values: Many pens have no cap threads so DTh is absent. (And of course, there are missing weights and centers of gravity for pens that were no longer available when I began making those measurements.) That many numbers can be hard to comprehend, and a graphical display is the best remedy for the problem. The kind of graph with which most of us are familiar uses *Cartesian coordinates* — one variable is plotted as position on a horizontal axis, and another as position on a vertical axis. [Think of a trading day’s stock prices (vertical) shown as a function of time of day (horizontal).]



That works well for two variables, but we need to show 14 variables simultaneously. The solution chosen here is a statistical graph known as a *parallel coordinates plot*. In this type of plot, the axes are rotated so that they are parallel, rather than perpendicular to each other. Consequently, a two-dimensional monitor or piece of paper can portray a large number of dimensions, all aligned side-by-side. Individual data values (measurements for a particular pen, in our case) are shown as positions on those parallel axes, connected by straight line segments.

The figure above plots the numeric pen measures (all but DTh, which is often undefined) in parallel coordinates style, for 144 of the pens in the data table. The 14 measures are shown as parallel vertical axes; the terse

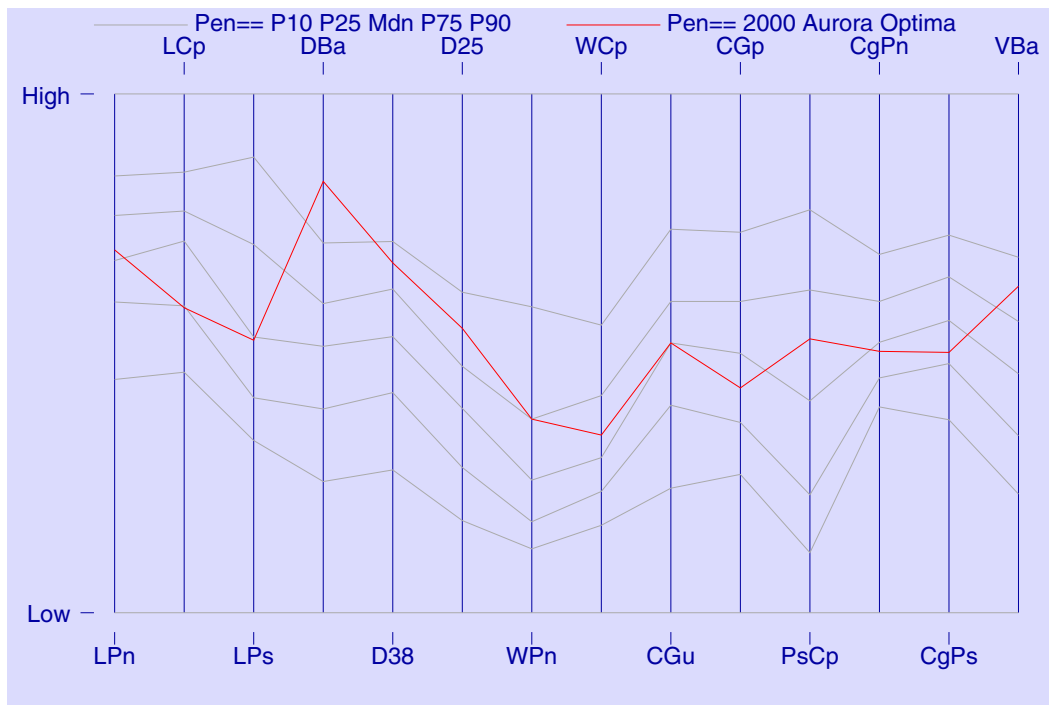
symbols for the measures are displayed at the ends of the axes, in alternating style. Each pen is plotted by a series of straight lines joined at that pen's value on each of the axes. So, each pen traces [a small pun!] its own characteristic 'signature' across the 14 parallel axes; there are 144 such signatures in the graph.

Each axis is scaled so that it extends from the smallest to the largest value of that measure in the current group of pens. So, think of the horizontal line across the bottom of the plot as representing a fictional pen that happens to have the smallest value for each of the 14 measures — if you can imagine such a curious pen! Similarly, the horizontal line at the top corresponds to a pen with the largest value of each measure.

Real pens of course vary from one attribute to another — relatively high on some dimensions, relatively low on others. But the 'signatures' of most pens are rather similar to each other. Look at the graph above and you'll see a strong sawtooth-like pattern: That's the result of lots of pens moving up and down together as you pass from one axis (attribute) to another. It's also a sign of similarity in the traces of those pens in this 14-dimensional plot. (In fact, the left-to-right ordering of the axes in the graph was selected to enhance that sawtooth effect.) But there are a few pens with measurements that deviate from the norm; they are the ones whose traces stand out from the sawtooth pattern.

Once you grasp how it works, the graph above is good for understanding that the majority of pens are pretty similar to each other in terms of the characteristics considered here. But, it's no help for learning about how a specific pen compares with other pens on these attributes. For that reason, the data table contains a parallel coordinates plot for every (well, almost every) individual pen, one that shows the pen's signature trace along with comparative information about other pens.

Below, you'll see an enlarged example of one of those plots — for the Aurora Optima. Look at that graph and you'll again see 14 vertical axes laid parallel to each other, but this time the left-to-right ordering matches the order in which the 14 attributes are listed in the data table. The axes are again scaled to stretch from the smallest to the largest values measured in the current crop of pens. The red trace is the Optima's signature.



In the background, in faint grey, you'll see traces for five fictional pens. The lowest of those five traces corresponds to what statisticians call the *10th percentile*: It passes through each axis at a position where about 10% of the current pens have a smaller value for that attribute. Similarly, the highest of the five grey traces corresponds to the *90th percentile*: It passes through each axis at a position where about 90% of the current pens have a smaller value. The second trace and fourth traces from the bottom correspond to the *25th percentile* and *75th percentile* on each axis: About 25% of the pens have a smaller value than the second trace, about 75% of the pens have a smaller value than the fourth trace. Finally, the central one of the five grey traces is the signature of the *median* pen: That trace passes through each axis at a point (the *50th percentile*) that divides the current group of pens into upper and lower halves with respect to that attribute.

Here's another way to describe those five reference traces, drawn in faint grey: Between the uppermost and lowermost grey traces lie the middle 80% of the current assortment of 204 pens; between the second and fourth grey traces lie the middle 50% of the pens. The central grey trace is a fictional 'typical' pen: Half the pens are larger, half the pens are smaller on each of the attributes portrayed. With that in mind, the Optima is rather typical of this group of 204 pens — except in diameter, especially maximum barrel diameter.

Note: With exceptions, the data table has a *tiny* image of a graph like that above, for each one of the current group of pens. But those graphs are scalable: They were drawn in *Postscript*[®], and they can be enlarged to fill your screen, with no loss of detail: Turn on Acrobat's *Zoom* toolbar, click the magnifying glass icon, and outline any of the tiny graphs. It will enlarge to look much like the one shown just above.

The exceptions: To draw a pen's signature in parallel coordinates, we must have a value for that pen along each of the axes. That's the reason for excluding the diameter DTh from these graphs. But some of the pens in the current group also lack center of gravity and weight measurements, because those pens were unavailable after I decided to start measuring those attributes. As a result, if a pen has no weights available, it has no graph in the data table.

However, a few pens have weights but no center of gravity measurements. Those pens *do* have a graph in the data table. That is because the two center of gravity measures, CGu and CGp, can be estimated with sufficient accuracy for graphing purposes from the pen's length and weight measurements. [The statistical term for this kind of glorified guesswork is *imputation*.] So, if a pen had weight and length measurements, I imputed the centers of gravity if necessary, in order to draw the parallel coordinate plots. But, I didn't show the imputed values in the data table — they're just guesses, albeit pretty accurate ones.

Acknowledgements

I am very grateful to Dennis Bowden of parkvillepens.com, for graciously loaning some members of his prized collection so that I could measure them. Thanks, Dennis!

I am also most grateful to David Nishimura, of vintagepens.com, for mirroring this document at

<http://www.vintagepens.com/pendata.pdf>

And, at long last, if you've actually read this far: The data table begins on the next page. Enjoy!

—JRG

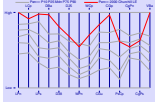
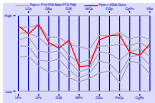
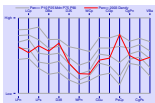
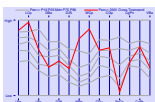
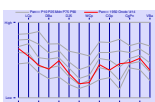
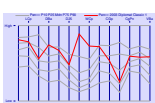
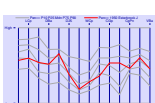
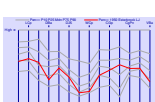
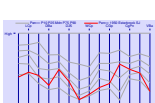
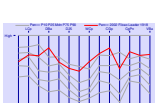
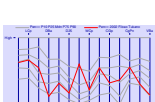
Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
A. A. Waterman Reliable 1905	ED BHR, taper cap #24 clone	LPn: 122 LCp: 151 LPs: 178	DBa: 9.7 DTh: D38: 9.6 D25: 7.3	WPn: 5.5 WCp: 1.5 CGu: 67.5 CGp: 82.5	PsCp: 1.17 CgPn: 0.55 CgPs: 0.47 VBa: 5.5	
Aurora 88P 1962	piston celluloid, GF cap	LPn: 126 LCp: 134 LPs: 144	DBa: 11.5 DTh: D38: 11.3 D25: 10.1	WPn: 12.25 WCp: 8 CGu: 72.5 CGp: 92.5	PsCp: 1.07 CgPn: 0.59 CgPs: 0.64 VBa: 8.0	
Aurora Optima 2000	piston celluloid	LPn: 123 LCp: 127 LPs: 154	DBa: 14.0 DTh: 12.8 D38: 11.5 D25: 10.3	WPn: 14 WCp: 7.25 CGu: 67.5 CGp: 87.5	PsCp: 1.21 CgPn: 0.56 CgPs: 0.57 VBa: 10.0	
Aurora Afrika LE 2002	piston celluloid, GP cap band Optima based	LPn: 123 LCp: 130 LPs: 156	DBa: 14.0 DTh: 12.8 D38: 11.4 D25: 10.3	WPn: 14 WCp: 8.25 CGu: 67.5 CGp: 90	PsCp: 1.20 CgPn: 0.55 CgPs: 0.57 VBa: 11.0	
Aurora Ipsilon 2002	C/C metal, resin GP cap band	LPn: 119 LCp: 137 LPs: 149	DBa: 12.0 DTh: D38: 10.7 D25: 9.4	WPn: 14.5 WCp: 7.25 CGu: 70 CGp: 87.5	PsCp: 1.09 CgPn: 0.59 CgPs: 0.58 VBa: 7.5	
Bexley Submariner Grande 2005	C/C acrylic, GP section Aspen prototype	LPn: 132 LCp: 147 LPs: 162	DBa: 14.1 DTh: 12.2 D38: 10.6 D25: 9.8	WPn: 18.25 WCp: 8 CGu: 55 CGp: 77.5	PsCp: 1.11 CgPn: 0.42 CgPs: 0.48 VBa: 12.5	
Bexley Submariner Grande 2005	C/C acrylic, plastic section Parkville Pen LE	LPn: 132 LCp: 146 LPs: 164	DBa: 14.2 DTh: 12.2 D38: 10.5 D25: 9.7	WPn: 12 WCp: 8.25 CGu: 70 CGp: 92.5	PsCp: 1.12 CgPn: 0.53 CgPs: 0.57 VBa: 12.5	
Bexley Goldline 2000	C/C plastic	LPn: 122 LCp: 136 LPs: 158	DBa: 14.2 DTh: 12.2 D38: 11.2 D25: 10.2	WPn: WCp: CGu: CGp:	PsCp: 1.16 CgPn: CgPs: VBa: 12.0	
Bexley Americana 2002	C/C plastic	LPn: 137 LCp: 147 LPs: 173	DBa: 13.2 DTh: 12.2 D38: 10.9 D25: 9.9	WPn: WCp: CGu: CGp:	PsCp: 1.18 CgPn: CgPs: VBa: 12.0	
Bexley 10th Anniversary 2003	C/C ebonite GP cap band	LPn: 130 LCp: 136 LPs: 160	DBa: 14.0 DTh: 12.2 D38: 10.8 D25: 10.4	WPn: 14.5 WCp: 8.25 CGu: 72.5 CGp: 92.5	PsCp: 1.17 CgPn: 0.56 CgPs: 0.58 VBa: 12.0	
Classic Pens CP-4 Washington 1999	TD SS overlay Sheaffer Legacy I based	LPn: 121 LCp: 138 LPs: 147	DBa: 12.6 DTh: D38: 12.5 D25: 11.2	WPn: 24 WCp: 12.25 CGu: 67.5 CGp: 85	PsCp: 1.07 CgPn: 0.57 CgPs: 0.58 VBa: 10.0	
Classic Pens CP-6 Charlotte 2002	piston SS overlay Pelikan M800 based	LPn: 128 LCp: 141 LPs: 163	DBa: 13.3 DTh: 12.6 D38: 11.4 D25: 11.0	WPn: 31 WCp: 14 CGu: 82.5 CGp: 97.5	PsCp: 1.16 CgPn: 0.64 CgPs: 0.59 VBa: 11.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

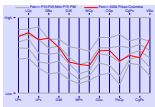
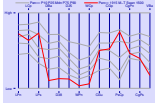
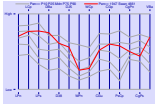
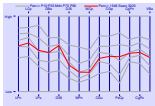
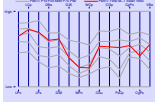
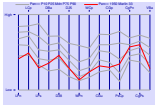
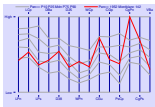
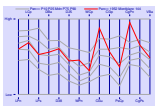
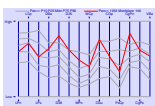
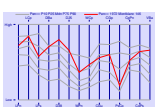
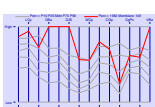
Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Columbus/Yamazaki Academia 1994	C/C celluloid	LPn: 121 LCp: 139 LPs: 155	DBa: 11.9 DTh: 10.2 D38: 10.2 D25: 9.7	WPn: WCp: CGu: CGp:	PsCp: 1.12 CgPn: CgPs: VBa: 8.5	
Conway Stewart Churchill LE 2000	lever ebonite, SG cap band	LPn: 139 LCp: 146 LPs: 181	DBa: 14.9 DTh: 14.1 D38: 12.2 D25: 11.2	WPn: 18.75 WCp: 13.75 CGu: 77.5 CGp: 108	PsCp: 1.24 CgPn: 0.57 CgPs: 0.60 VBa: 14.0	
Conway Stewart Duro 2004	button acrylic, SG cap band	LPn: 131 LCp: 137 LPs: 175	DBa: 12.8 DTh: 12.4 D38: 10.9 D25: 11.1	WPn: 12.75 WCp: 7 CGu: 72.5 CGp: 100	PsCp: 1.28 CgPn: 0.56 CgPs: 0.57 VBa: 10.0	
Conway Stewart Dandy 2003	C/C acrylic, 2 cap rings	LPn: 119 LCp: 124 LPs: 160	DBa: 12.2 DTh: 11.4 D38: 11.4 D25: 9.3	WPn: 11 WCp: 5.5 CGu: 65 CGp: 90	PsCp: 1.29 CgPn: 0.56 CgPs: 0.56 VBa: 8.5	
Cross Townsend 2001	C/C metal, lacquer GP cap rings	LPn: 131 LCp: 150 LPs: 159	DBa: 11.0 DTh: D38: 10.3 D25: 9.0	WPn: 24.25 WCp: 17 CGu: 70 CGp: 95	PsCp: 1.06 CgPn: 0.54 CgPs: 0.60 VBa: 7.5	
De La Rue Onoto #14 1950	lever celluloid, 2 GF cap rings	LPn: 121 LCp: 125 LPs: 148	DBa: 11.0 DTh: 10.4 D38: 10.4 D25: 8.8	WPn: 9 WCp: 4.5 CGu: 65 CGp: 85	PsCp: 1.19 CgPn: 0.55 CgPs: 0.57 VBa: 7.5	
Diplomat Classic No. 1 2003	C/C metal, lacquer GP cap band	LPn: 129 LCp: 139 LPs: 156	DBa: 13.4 DTh: D38: 11.4 D25: 9.9	WPn: 28 WCp: 14.25 CGu: 75 CGp: 92.5	PsCp: 1.12 CgPn: 0.58 CgPs: 0.59 VBa: 9.5	
Esterbrook J 1950	lever plastic, CP trim DJ	LPn: 116 LCp: 128 LPs: 155	DBa: 11.9 DTh: 11.4 D38: 11.4 D25: 9.2	WPn: 9 WCp: 6 CGu: 62.5 CGp: 92.5	PsCp: 1.21 CgPn: 0.55 CgPs: 0.59 VBa: 8.5	
Esterbrook LJ 1950	lever plastic, CP trim DJ	LPn: 117 LCp: 129 LPs: 156	DBa: 10.7 DTh: 10.5 D38: 10.5 D25: 9.1	WPn: 8.5 WCp: 4.25 CGu: 65 CGp: 90	PsCp: 1.21 CgPn: 0.55 CgPs: 0.57 VBa: 7.0	
Esterbrook SJ 1950	lever plastic, CP trim DJ	LPn: 108 LCp: 121 LPs: 149	DBa: 10.5 DTh: 10.3 D38: 10.6 D25: 9.0	WPn: 7.25 WCp: 4.5 CGu: 60 CGp: 85	PsCp: 1.23 CgPn: 0.56 CgPs: 0.56 VBa: 6.0	
Filcao Leader 1918 2002	C/C celluloid	LPn: 120 LCp: 136 LPs: 166	DBa: 14.0 DTh: D38: 11.3 D25: 10.4	WPn: 18.25 WCp: 13 CGu: 75 CGp: 103	PsCp: 1.22 CgPn: 0.63 CgPs: 0.62 VBa: 11.5	
Filcao Tukano 2002	button SS overlay celluloid cap	LPn: 121 LCp: 134 LPs: 158	DBa: 10.0 DTh: 10.2 D38: 9.9 D25: 8.4	WPn: 21.5 WCp: 6.5 CGu: 70 CGp: 87.5	PsCp: 1.18 CgPn: 0.59 CgPs: 0.55 VBa: 6.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Filcao Columbia, the Gem 2004	button plastic SS cap ring	LPn: 125 LCp: 140 LPs: 165	DBa: 13.3 DTh: 11.8 D38: 11.1 D25: 9.4	WPn: 14.25 WCp: 7.5 CGu: 70 CGp: 92.5	PsCp: 1.18 CgPn: 0.56 CgPs: 0.56 VBa: 11.0	
Mabie-Todd Swan 1500 1915	ED BHR, GF band	LPn: 124 LCp: 130 LPs: 166	DBa: 9.2 DTh: D38: 8.4 D25: 7.5	WPn: 5 WCp: 2 CGu: CGp:	PsCp: 1.28 CgPn: CgPs: VBa: 5.5	
Mabie-Todd Swan C5L 1920	lever BCHR, 14K band	LPn: 132 LCp: 142 LPs: 173	DBa: 12.4 DTh: 10.7 D38: 9.9 D25: 8.9	WPn: WCp: CGu: CGp:	PsCp: 1.22 CgPn: CgPs: VBa: 10.0	
Mabie-Todd Swan 4661 1947	leverless celluloid GF cap rings	LPn: 123 LCp: 138 LPs: 169	DBa: 13.5 DTh: 12.4 D38: 11.1 D25: 10.4	WPn: 11 WCp: 6 CGu: 67.5 CGp: 95	PsCp: 1.23 CgPn: 0.56 CgPs: 0.56 VBa: 11.0	
Mabie-Todd Swan 3220 1948	lever celluloid, GF cap rings brass threads	LPn: 118 LCp: 130 LPs: 155	DBa: 11.9 DTh: 11.2 D38: 11.1 D25: 9.0	WPn: 11 WCp: 5.5 CGu: 65 CGp: 90	PsCp: 1.19 CgPn: 0.56 CgPs: 0.57 VBa: 8.5	
Mabie-Todd Swan 1060 1950	leverless plastic	LPn: 121 LCp: 137 LPs: 166	DBa: 12.6 DTh: 11.5 D38: 11.2 D25: 9.2	WPn: 11 WCp: 5.5 CGu: CGp:	PsCp: 1.21 CgPn: CgPs: VBa: 9.5	
Merlin Merlin 33 1950	button celluloid, GF cap ring	LPn: 108 LCp: 121 LPs: 140	DBa: 10.8 DTh: 10.2 D38: 10.3 D25: 8.6	WPn: 7.75 WCp: 5.25 CGu: 62.5 CGp: 82.5	PsCp: 1.15 CgPn: 0.58 CgPs: 0.59 VBa: 6.5	
Montblanc 142 1952	piston celluloid, GF cap rings	LPn: 108 LCp: 124 LPs: 144	DBa: 11.3 DTh: 10.9 D38: 10.7 D25: 8.9	WPn: 15 WCp: 7 CGu: 75 CGp: 87.5	PsCp: 1.16 CgPn: 0.69 CgPs: 0.61 VBa: 6.5	
Montblanc 144 1952	piston celluloid, GF cap rings	LPn: 118 LCp: 133 LPs: 154	DBa: 12.2 DTh: 11.3 D38: 11.1 D25: 9.6	WPn: 16.25 WCp: 6.75 CGu: 80 CGp: 92.5	PsCp: 1.16 CgPn: 0.68 CgPs: 0.60 VBa: 8.5	
Montblanc 146 1954	piston celluloid GF cap rings	LPn: 118 LCp: 134 LPs: 154	DBa: 12.7 DTh: 12.2 D38: 12.2 D25: 10.7	WPn: 17 WCp: 8.25 CGu: 75 CGp: 92.5	PsCp: 1.15 CgPn: 0.65 CgPs: 0.59 VBa: 9.0	
Montblanc 146 1972	piston resin, GP cap rings	LPn: 124 LCp: 142 LPs: 157	DBa: 13.2 DTh: 12.2 D38: 12.1 D25: 11.0	WPn: 14 WCp: 9.5 CGu: 70 CGp: 95	PsCp: 1.10 CgPn: 0.56 CgPs: 0.60 VBa: 10.5	
Montblanc 149 1982	piston resin, GP cap rings	LPn: 132 LCp: 148 LPs: 166	DBa: 15.1 DTh: 14.3 D38: 13.3 D25: 13.3	WPn: 19.25 WCp: 11 CGu: 77.5 CGp: 97.5	PsCp: 1.12 CgPn: 0.59 CgPs: 0.59 VBa: 14.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Montblanc 264 1956	piston celluloid, GP cap ring fpW1/269 #9	LPn: 119 LCp: 132 LPs: 151	DBa: 12.2 DTh: 11.3 D38: 11.3 D25: 9.3	WPn: 11.5 WCp: 6.5 CGu: 72.5 CGp: 92.5	PsCp: 1.15 CgPn: 0.62 CgPs: 0.61 VBa: 8.0	
Montblanc 252 1954	piston celluloid GF cap rings	LPn: 109 LCp: 124 LPs: 142	DBa: 11.6 DTh: 10.7 D38: 10.7 D25: 9.6	WPn: 10.5 WCp: 6.5 CGu: 70 CGp: 90	PsCp: 1.14 CgPn: 0.60 CgPs: 0.59 VBa: 7.0	
Montblanc 256 1954	piston celluloid GF cap rings	LPn: 117 LCp: 131 LPs: 151	DBa: 13.0 DTh: 10.8 D38: 12.0 D25: 10.8	WPn: 13 WCp: 7.75 CGu: 70 CGp: 90	PsCp: 1.15 CgPn: 0.60 CgPs: 0.59 VBa: 9.5	
Montblanc 342 1954	piston celluloid, GF cap ring	LPn: 114 LCp: 128 LPs: 144	DBa: 11.7 DTh: 10.9 D38: 11.0 D25: 9.5	WPn: 10.5 WCp: 5 CGu: 67.5 CGp: 85	PsCp: 1.13 CgPn: 0.60 CgPs: 0.58 VBa: 8.0	
Montblanc 344 1954	piston plastic	LPn: 121 LCp: 135 LPs: 153	DBa: 12.2 DTh: 11.4 D38: 11.3 D25: 9.6	WPn: 12 WCp: 5.75 CGu: 72.5 CGp: 92.5	PsCp: 1.13 CgPn: 0.61 CgPs: 0.60 VBa: 8.5	
Montblanc 334 1/2 1953	piston plastic, 2 GF cap rings	LPn: 117 LCp: 123 LPs: 148	DBa: 12.0 DTh: 11.1 D38: 11.0 D25: 9.0	WPn: 11.5 WCp: 6.25 CGu: 70 CGp: 90	PsCp: 1.21 CgPn: 0.61 CgPs: 0.61 VBa: 8.5	
Montblanc 22 1962	piston resin, GF cap rings	LPn: 117 LCp: 130 LPs: 141	DBa: 11.7 DTh: 10.3 D38: 10.3 D25: 9.3	WPn: 8.75 WCp: 5.5 CGu: 62.5 CGp: 82.5	PsCp: 1.09 CgPn: 0.53 CgPs: 0.58 VBa: 8.0	
Montblanc 72 1962	piston celluloid, GF cap	LPn: 116 LCp: 130 LPs: 143	DBa: 11.7 DTh: 10.3 D38: 10.3 D25: 9.4	WPn: 8.5 WCp: 8.25 CGu: 62.5 CGp: 90	PsCp: 1.10 CgPn: 0.54 CgPs: 0.62 VBa: 7.5	
Montblanc 31 1962	piston resin, GF cap ring	LPn: 116 LCp: 129 LPs: 137	DBa: 11.7 DTh: 11.5 D38: 10.2 D25: 9.4	WPn: 8 WCp: 4.5 CGu: 65 CGp: 82.5	PsCp: 1.07 CgPn: 0.56 CgPs: 0.59 VBa: 8.0	
Montblanc 34 1962	piston resin, GF cap ring	LPn: 123 LCp: 134 LPs: 147	DBa: 12.2 DTh: 12.0 D38: 10.7 D25: 9.9	WPn: 9.5 WCp: 5 CGu: 67.5 CGp: 85	PsCp: 1.09 CgPn: 0.55 CgPs: 0.57 VBa: 8.0	
Montblanc 121 1968	piston resin, GP trim	LPn: 123 LCp: 135 LPs: 147	DBa: 11.7 DTh: 10.5 D38: 10.5 D25: 9.3	WPn: 8.75 WCp: 6 CGu: 62.5 CGp: 90	PsCp: 1.09 CgPn: 0.52 CgPs: 0.61 VBa: 8.5	
Montblanc 128 1974	piston plastic, SS cap SS clip	LPn: 122 LCp: 135 LPs: 146	DBa: 11.7 DTh: 10.5 D38: 10.5 D25: 9.4	WPn: 8.5 WCp: 9.75 CGu: 65 CGp: 95	PsCp: 1.08 CgPn: 0.54 CgPs: 0.65 VBa: 8.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Montblanc Montblanc Noblesse 1973	C/C brushed ss, GP clip	LPn: 125 LCp: 138 LPs: 155	DBa: 9.1 DTh: D38: 8.3 D25: 8.3	WPn: 14.75 WCp: 9.25 CGu: 67.5 CGp: 92.5	PsCp: 1.13 CgPn: 0.54 CgPs: 0.60 VBa: 5.0	
Moore L-92 1920	lever BCHR, GF trim	LPn: 125 LCp: 138 LPs: 181	DBa: 11.2 DTh: 10.1 D38: 8.8 D25: 8.1	WPn: 9.25 WCp: 5.5 CGu: 70 CGp: 103	PsCp: 1.31 CgPn: 0.57 CgPs: 0.56 VBa: 7.5	
Namiki Custom Impressions 2000	C/C celluloid, GP cap rings	LPn: 128 LCp: 146 LPs: 162	DBa: 12.9 DTh: 12.6 D38: 11.6 D25: 10.6	WPn: 15.75 WCp: 12.75 CGu: 67.5 CGp: 95	PsCp: 1.11 CgPn: 0.52 CgPs: 0.59 VBa: 10.5	
Namiki Falcon 2002	C/C plastic GP cap ring	LPn: 122 LCp: 136 LPs: 150	DBa: 12.1 DTh: 11.9 D38: 10.9 D25: 10.2	WPn: 9.25 WCp: 9 CGu: 65 CGp: 95	PsCp: 1.10 CgPn: 0.53 CgPs: 0.63 VBa: 8.5	
Osmia 663 1954	piston celluloid, GF cap rings	LPn: 113 LCp: 118 LPs: 143	DBa: 11.4 DTh: 10.6 D38: 10.5 D25: 8.8	WPn: 10.5 WCp: 5.25 CGu: 67.5 CGp: 85	PsCp: 1.21 CgPn: 0.61 CgPs: 0.60 VBa: 7.0	
Parker 42 1/2 1900	ED BCHR, GF bands	LPn: 125 LCp: 143 LPs: 177	DBa: 9.5 DTh: D38: 9.1 D25: 7.4	WPn: 7.25 WCp: 3.25 CGu: 72.5 CGp: 97.5	PsCp: 1.24 CgPn: 0.58 CgPs: 0.55 VBa: 6.0	
Parker Lucky Curve 20 1918	button BHR, GF cap band Jack Knife	LPn: 128 LCp: 135 LPs: 171	DBa: 10.7 DTh: 9.5 D38: 9.4 D25: 7.8	WPn: 8.75 WCp: 5.5 CGu: 72.5 CGp: 103	PsCp: 1.26 CgPn: 0.58 CgPs: 0.60 VBa: 7.5	
Parker Lucky Curve 24 1/2 1920	button BCHR, NP clip Jack Knife	LPn: 126 LCp: 136 LPs: 162	DBa: 12.3 DTh: 8.3 D38: 11.3 D25: 9.9	WPn: 12 WCp: 5.5 CGu: 70 CGp: 95	PsCp: 1.19 CgPn: 0.56 CgPs: 0.58 VBa: 10.0	
Parker Duofold Senior 1925	button RHR, Big Red	LPn: 134 LCp: 139 LPs: 175	DBa: 13.4 DTh: 12.4 D38: 11.6 D25: 11.7	WPn: 20 WCp: 11 CGu: 77.5 CGp: 103	PsCp: 1.26 CgPn: 0.58 CgPs: 0.58 VBa: 12.0	
Parker Duofold Senior 1927	button Permanite	LPn: 131 LCp: 137 LPs: 173	DBa: 13.5 DTh: 12.4 D38: 12.1 D25: 11.5	WPn: 14 WCp: 8 CGu: 72.5 CGp: 103	PsCp: 1.27 CgPn: 0.56 CgPs: 0.59 VBa: 12.0	
Parker Duofold Junior 1927	button Permanite	LPn: 110 LCp: 116 LPs: 148	DBa: 12.3 DTh: 11.6 D38: 11.6 D25: 9.4	WPn: 10.25 WCp: 6.5 CGu: 65 CGp: 87.5	PsCp: 1.28 CgPn: 0.59 CgPs: 0.59 VBa: 8.0	
Parker Duofold Senior 1930	button Permanite Big Red	LPn: 124 LCp: 129 LPs: 162	DBa: 13.2 DTh: 12.4 D38: 11.7 D25: 10.4	WPn: 13.75 WCp: 7 CGu: 70 CGp: 92.5	PsCp: 1.26 CgPn: 0.57 CgPs: 0.57 VBa: 10.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Parker Duofold Special 1930	button celluloid, GF cap rings	LPn: 122 LCp: 130 LPs: 157	DBa: 12.4 DTh: 11.6 D38: 11.5 D25: 9.4	WPn: 11 WCp: 5.75 CGu: 67.5 CGp: 90	PsCp: 1.20 CgPn: 0.55 CgPs: 0.57 VBa: 9.5	
Parker Duofold Junior 1932	button celluloid	LPn: 113 LCp: 120 LPs: 148	DBa: 12.4 DTh: 11.4 D38: 11.7 D25: 9.4	WPn: 10.75 WCp: 5.25 CGu: 60 CGp: 80	PsCp: 1.24 CgPn: 0.54 CgPs: 0.54 VBa: 8.0	
Parker Duofold Juniorette 1932	button celluloid Parker Canada	LPn: 102 LCp: 113 LPs: 137	DBa: 10.7 DTh: 9.4 D38: 9.7 D25: 8.9	WPn: 8 WCp: 5 CGu: 57.5 CGp: 80	PsCp: 1.21 CgPn: 0.57 CgPs: 0.58 VBa: 6.0	
Parker Duofold Senior 1942	Vacumatic celluloid Striped	LPn: 124 LCp: 137 LPs: 156	DBa: 12.1 DTh: 10.6 D38: 10.5 D25: 8.5	WPn: 10.75 WCp: 6.75 CGu: 67.5 CGp: 92.5	PsCp: 1.14 CgPn: 0.55 CgPs: 0.59 VBa: 9.5	
Parker Duofold Standard 1942	Vacumatic celluloid Striped	LPn: 120 LCp: 133 LPs: 151	DBa: 11.3 DTh: 10.4 D38: 10.4 D25: 9.0	WPn: 10.5 WCp: 5.25 CGu: 67.5 CGp: 87.5	PsCp: 1.14 CgPn: 0.57 CgPs: 0.58 VBa: 8.0	
Parker Duofold Ingenue 1941	Vacumatic celluloid Striped	LPn: 109 LCp: 119 LPs: 137	DBa: 11.0 DTh: 10.0 D38: 10.0 D25: 8.6	WPn: 7.75 WCp: 4.5 CGu: 62.5 CGp: 82.5	PsCp: 1.15 CgPn: 0.58 CgPs: 0.59 VBa: 7.0	
Parker Duofold Maxima 1956	Aerometric celluloid, GF cap band Parker UK	LPn: 130 LCp: 140 LPs: 162	DBa: 12.4 DTh: 11.6 D38: 11.1 D25: 10.3	WPn: 12.5 WCp: 5.75 CGu: 65 CGp: 90	PsCp: 1.16 CgPn: 0.51 CgPs: 0.56 VBa: 10.0	
Parker Slimfold 1956	Aerometric celluloid, GF cap ring Parker UK	LPn: 113 LCp: 124 LPs: 147	DBa: 10.4 DTh: 9.8 D38: 9.6 D25: 8.2	WPn: 8 WCp: 4.5 CGu: 60 CGp: 85	PsCp: 1.19 CgPn: 0.53 CgPs: 0.57 VBa: 6.0	
Parker Duofold Centennial 1989	C/C acrylic, GP cap rings	LPn: 128 LCp: 137 LPs: 172	DBa: 13.2 DTh: 12.1 D38: 10.9 D25: 11.1	WPn: 20.75 WCp: 9.25 CGu: 75 CGp: 100	PsCp: 1.26 CgPn: 0.60 CgPs: 0.57 VBa: 10.5	
Parker Duofold Centennial 1998	C/C acrylic, GP cap rings	LPn: 128 LCp: 137 LPs: 173	DBa: 13.1 DTh: 12.1 D38: 10.8 D25: 10.9	WPn: 19 WCp: 9.5 CGu: CGp:	PsCp: 1.26 CgPn: CgPs: VBa: 10.5	
Parker Duofold Centennial 2000	C/C resin, GP cap band Greenwich LE	LPn: 128 LCp: 136 LPs: 173	DBa: 13.0 DTh: 12.2 D38: 10.9 D25: 10.9	WPn: 19.25 WCp: 9.5 CGu: 72.5 CGp: 97.5	PsCp: 1.26 CgPn: 0.58 CgPs: 0.56 VBa: 10.0	
Parker Duofold International 1989	C/C acrylic, GP cap rings	LPn: 124 LCp: 131 LPs: 163	DBa: 11.8 DTh: 10.8 D38: 10.0 D25: 8.9	WPn: 15.5 WCp: 7.25 CGu: 70 CGp: 92.5	PsCp: 1.24 CgPn: 0.58 CgPs: 0.57 VBa: 8.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Parker Duofold International 2000	C/C acrylic, GP cap rings	LPn: 124 LCp: 132 LPs: 164	DBa: 11.9 DTh: 10.9 D38: 9.9 D25: 8.9	WPn: 14.75 WCp: 7.5 CGu: 72.5 CGp: 97.5	PsCp: 1.24 CgPn: 0.59 CgPs: 0.59 VBa: 8.5	
Parker Vacumatic Standard 1934	Vacumatic celluloid, DJ	LPn: 120 LCp: 130 LPs: 152	DBa: 12.2 DTh: 11.5 D38: 11.5 D25: 9.2	WPn: 11.5 WCp: 6.25 CGu: 75 CGp: 95	PsCp: 1.17 CgPn: 0.64 CgPs: 0.62 VBa: 9.0	
Parker Vacumatic Junior 1936	Vacumatic celluloid, NP trim lockdown DJ	LPn: 112 LCp: 121 LPs: 147	DBa: 12.2 DTh: 11.3 D38: 11.4 D25: 9.4	WPn: 9.5 WCp: 6.5 CGu: 65 CGp: 92.5	PsCp: 1.21 CgPn: 0.59 CgPs: 0.62 VBa: 8.5	
Parker Vacumatic Debutante 1937	Vacumatic celluloid, DJ	LPn: 110 LCp: 120 LPs: 149	DBa: 11.0 DTh: 9.9 D38: 10.0 D25: 8.5	WPn: 10 WCp: 5 CGu: 70 CGp: 90	PsCp: 1.25 CgPn: 0.65 CgPs: 0.60 VBa: 6.5	
Parker Vacumatic Maxima 1940	Vacumatic celluloid, DJ Slender Maxima	LPn: 125 LCp: 135 LPs: 156	DBa: 12.3 DTh: 10.7 D38: 10.4 D25: 8.4	WPn: 11 WCp: 6.5 CGu: 72.5 CGp: 95	PsCp: 1.16 CgPn: 0.58 CgPs: 0.60 VBa: 9.5	
Parker Vacumatic Junior 1944	Vacumatic celluloid, 2 cap rings Long Junior Parker Canada	LPn: 123 LCp: 133 LPs: 154	DBa: 12.3 DTh: 10.4 D38: 10.5 D25: 8.7	WPn: 10 WCp: 6 CGu: 67.5 CGp: 92.5	PsCp: 1.16 CgPn: 0.55 CgPs: 0.59 VBa: 9.0	
Parker Vacumatic Major 1946	Vacumatic celluloid GF cap band	LPn: 120 LCp: 128 LPs: 150	DBa: 12.4 DTh: 10.8 D38: 10.7 D25: 8.5	WPn: 10.5 WCp: 6.25 CGu: 65 CGp: 90	PsCp: 1.17 CgPn: 0.55 CgPs: 0.60 VBa: 9.5	
Parker Deluxe Challenger 1937	button celluloid	LPn: 115 LCp: 127 LPs: 146	DBa: 12.2 DTh: 11.7 D38: 11.7 D25: 9.9	WPn: WCp: CGu: CGp:	PsCp: 1.15 CgPn: CgPs: VBa: 8.0	
Parker Challenger 1940	button celluloid, GF cap band	LPn: 109 LCp: 120 LPs: 144	DBa: 10.6 DTh: 10.0 D38: 9.9 D25: 7.9	WPn: 8 WCp: 5.5 CGu: 62.5 CGp: 87.5	PsCp: 1.20 CgPn: 0.58 CgPs: 0.60 VBa: 6.5	
Parker 51 1947	Vacumatic Lucite, Lustraloy Cap raised band	LPn: 124 LCp: 139 LPs: 150	DBa: 11.9 DTh: D38: 11.1 D25: 9.5	WPn: 9.5 WCp: 8.25 CGu: 65 CGp: 92.5	PsCp: 1.08 CgPn: 0.52 CgPs: 0.62 VBa: 9.0	
Parker 51 Double Jewel 1947	Vacumatic Lucite, GF cap T7	LPn: 126 LCp: 137 LPs: 152	DBa: 11.8 DTh: D38: 11.0 D25: 9.5	WPn: 10 WCp: 8.75 CGu: 65 CGp: 92.5	PsCp: 1.11 CgPn: 0.53 CgPs: 0.61 VBa: 8.5	
Parker 51 Demi 1947	Vacumatic Lucite, GF cap	LPn: 111 LCp: 122 LPs: 133	DBa: 11.6 DTh: D38: 11.2 D25: 9.6	WPn: 8.5 WCp: 8.5 CGu: 57.5 CGp: 82.5	PsCp: 1.09 CgPn: 0.52 CgPs: 0.61 VBa: 7.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Parker 51 1950	Aerometric Lucite, GF cap	LPn: 127 LCp: 138 LPs: 151	DBa: 11.9 DTh: D38: 10.7 D25: 9.7	WPn: 11.5 WCp: 8.25 CGu: 65 CGp: 90	PsCp: 1.10 CgPn: 0.51 CgPs: 0.59 VBa: 8.5	
Parker 51 Insignia (Signet) 1950	Aerometric plastic, GF overlay fpW1/203 #5	LPn: 128 LCp: 139 LPs: 155	DBa: 11.9 DTh: D38: 10.8 D25: 9.6	WPn: 18.75 WCp: 8.5 CGu: 72.5 CGp: 90	PsCp: 1.12 CgPn: 0.57 CgPs: 0.57 VBa: 9.0	
Parker 51 Demi 1954	Aerometric Lucite, GF cap	LPn: 118 LCp: 129 LPs: 142	DBa: 11.4 DTh: D38: 10.5 D25: 9.3	WPn: 10 WCp: 7.5 CGu: 57.5 CGp: 82.5	PsCp: 1.11 CgPn: 0.48 CgPs: 0.58 VBa: 7.5	
Parker 51 1972	Aerometric plastic, ss cap Mark III Classic fpW1/93 #15	LPn: 120 LCp: 133 LPs: 144	DBa: 11.0 DTh: D38: 10.8 D25: 9.4	WPn: 11 WCp: 8.25 CGu: 62.5 CGp: 87.5	PsCp: 1.08 CgPn: 0.53 CgPs: 0.60 VBa: 7.0	
Parker 51 SE 2004	C/C resin, GP trim vermeil cap	LPn: 126 LCp: 137 LPs: 149	DBa: 11.6 DTh: D38: 10.9 D25: 9.6	WPn: 11.25 WCp: 11.5 CGu: 67.5 CGp: 95	PsCp: 1.09 CgPn: 0.54 CgPs: 0.64 VBa: 8.5	
Parker 17 Lady Insignia 1967	Aerometric GF overlay Parker UK fpW1/199 #6	LPn: 110 LCp: 119 LPs: 128	DBa: 10.2 DTh: D38: 10.3 D25: 9.0	WPn: 12.5 WCp: 6.75 CGu: 62.5 CGp: 77.5	PsCp: 1.07 CgPn: 0.57 CgPs: 0.61 VBa: 5.5	
Parker 45 Signet 1964	C/C GF overlay fpPP2/197 fpW1/95 #10	LPn: 127 LCp: 136 LPs: 147	DBa: 11.5 DTh: D38: 10.2 D25: 9.0	WPn: 10 WCp: 7.75 CGu: 67.5 CGp: 90	PsCp: 1.08 CgPn: 0.53 CgPs: 0.61 VBa: 8.0	
Parker 75 1964	C/C SS overlay	LPn: 118 LCp: 128 LPs: 138	DBa: 10.8 DTh: D38: 9.3 D25: 7.9	WPn: 13.75 WCp: 8.5 CGu: 70 CGp: 87.5	PsCp: 1.08 CgPn: 0.59 CgPs: 0.63 VBa: 7.0	
Parker Sonnet Fougere 1998	C/C SS overlay	LPn: 123 LCp: 133 LPs: 149	DBa: 10.9 DTh: D38: 9.8 D25: 9.0	WPn: 18.5 WCp: 11 CGu: 70 CGp: 90	PsCp: 1.12 CgPn: 0.58 CgPs: 0.60 VBa: 7.0	
Parker 100 2004	C/C metal, lacquer	LPn: 126 LCp: 142 LPs: 152	DBa: 12.8 DTh: D38: 11.7 D25: 10.9	WPn: 21.5 WCp: 14 CGu: 67.5 CGp: 90	PsCp: 1.06 CgPn: 0.53 CgPs: 0.59 VBa: 10.0	
Pelikan 100 1937	piston celluloid	LPn: 114 LCp: 117 LPs: 157	DBa: 11.7 DTh: 10.4 D38: 10.4 D25: 8.6	WPn: 8.75 WCp: 5.25 CGu: 70 CGp: 92.5	PsCp: 1.34 CgPn: 0.61 CgPs: 0.58 VBa: 7.5	
Pelikan 100N 1948	piston celluloid	LPn: 118 LCp: 122 LPs: 158	DBa: 12.3 DTh: 11.1 D38: 10.9 D25: 9.4	WPn: 9.5 WCp: 5 CGu: 70 CGp: 92.5	PsCp: 1.30 CgPn: 0.60 CgPs: 0.58 VBa: 9.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Pelikan 1935 LE 2000	piston celluloid	LPn: 114 LCp: 117 LPs: 159	DBa: 11.9 DTh: 10.7 D38: 10.5 D25: 8.6	WPn: 8.5 WCp: 5.75 CGu: 67.5 CGp: 95	PsCp: 1.36 CgPn: 0.59 CgPs: 0.59 VBa: 7.5	
Pelikan 140 1954	piston celluloid	LPn: 113 LCp: 124 LPs: 143	DBa: 12.4 DTh: 10.9 D38: 11.7 D25: 9.7	WPn: 8.75 WCp: 6 CGu: 65 CGp: 85	PsCp: 1.16 CgPn: 0.58 CgPs: 0.59 VBa: 8.5	
Pelikan P1 1961	piston resin, GF cap	LPn: 126 LCp: 133 LPs: 144	DBa: 10.7 DTh: 8.7 D38: 10.1 D25: 9.4	WPn: 8 WCp: 6.5 CGu: 67.5 CGp: 92.5	PsCp: 1.08 CgPn: 0.55 CgPs: 0.64 VBa: 7.0	
Pelikan 30 1972	piston resin, GF cap fpPP2/203	LPn: 126 LCp: 134 LPs: 142	DBa: 11.2 DTh: D38: 10.1 D25: 9.2	WPn: 8 WCp: 8.75 CGu: 67.5 CGp: 90	PsCp: 1.07 CgPn: 0.54 CgPs: 0.63 VBa: 8.0	
Pelikan 400 1953	piston celluloid, GF cap ring	LPn: 121 LCp: 126 LPs: 146	DBa: 12.2 DTh: 10.9 D38: 10.9 D25: 9.4	WPn: 9.25 WCp: 6.5 CGu: 70 CGp: 90	PsCp: 1.16 CgPn: 0.58 CgPs: 0.62 VBa: 9.0	
Pelikan 400N 1955	piston celluloid, GF cap ring	LPn: 122 LCp: 127 LPs: 146	DBa: 12.2 DTh: 10.9 D38: 10.9 D25: 9.4	WPn: 9.25 WCp: 6 CGu: 67.5 CGp: 85	PsCp: 1.15 CgPn: 0.56 CgPs: 0.58 VBa: 9.0	
Pelikan 500N 1955	piston celluloid, GF cap	LPn: 122 LCp: 128 LPs: 147	DBa: 11.9 DTh: 10.9 D38: 11.0 D25: 9.3	WPn: 9.5 WCp: 8.5 CGu: 70 CGp: 95	PsCp: 1.15 CgPn: 0.57 CgPs: 0.64 VBa: 8.5	
Pelikan 400NN 1957	piston celluloid, GF cap ring	LPn: 122 LCp: 130 LPs: 147	DBa: 11.9 DTh: 10.9 D38: 10.9 D25: 9.4	WPn: 9.25 WCp: 6 CGu: 67.5 CGp: 87.5	PsCp: 1.13 CgPn: 0.56 CgPs: 0.59 VBa: 8.5	
Pelikan M750 1989	piston silver plate overlay	LPn: 121 LCp: 126 LPs: 148	DBa: 12.0 DTh: 11.0 D38: 11.1 D25: 9.3	WPn: 17 WCp: 8.75 CGu: 72.5 CGp: 90	PsCp: 1.17 CgPn: 0.61 CgPs: 0.61 VBa: 9.0	
Pelikan M730 1993	piston resin, SS cap SS turning knob	LPn: 122 LCp: 126 LPs: 147	DBa: 12.0 DTh: 11.0 D38: 11.0 D25: 9.1	WPn: 10.5 WCp: 9.5 CGu: 72.5 CGp: 97.5	PsCp: 1.17 CgPn: 0.61 CgPs: 0.66 VBa: 9.0	
Pelikan M430 1998	piston resin, SS cap	LPn: 122 LCp: 126 LPs: 148	DBa: 11.9 DTh: 11.1 D38: 11.1 D25: 9.2	WPn: 9.5 WCp: 13.25 CGu: 67.5 CGp: 97.5	PsCp: 1.18 CgPn: 0.55 CgPs: 0.66 VBa: 8.5	
Pelikan M700 Toledo 1997	piston vermeil overlay	LPn: 121 LCp: 125 LPs: 148	DBa: 12.1 DTh: 11.1 D38: 11.1 D25: 9.4	WPn: 17 WCp: 4.75 CGu: 72.5 CGp: 85	PsCp: 1.18 CgPn: 0.60 CgPs: 0.57 VBa: 9.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Pelikan M450 2004	piston celluloid, vermeil cap	LPn: 121 LCp: 125 LPs: 147	DBa: 12.0 DTh: 11.1 D38: 11.1 D25: 9.4	WPn: 11 WCp: 12.5 CGu: 72.5 CGp: 100	PsCp: 1.17 CgPn: 0.61 CgPs: 0.67 VBa: 8.5	
Pelikan M150 2001	piston plastic, GP cap ring	LPn: 116 LCp: 120 LPs: 144	DBa: 11.1 DTh: 10.7 D38: 10.6 D25: 9.1	WPn: 7.5 WCp: 4.25 CGu: 67.5 CGp: 87.5	PsCp: 1.19 CgPn: 0.58 CgPs: 0.61 VBa: 7.5	
Pelikan M200 2001	piston resin, GP cap ring	LPn: 119 LCp: 126 LPs: 146	DBa: 11.9 DTh: 11.0 D38: 11.2 D25: 9.5	WPn: 9.25 WCp: 5 CGu: 65 CGp: 85	PsCp: 1.16 CgPn: 0.55 CgPs: 0.58 VBa: 8.5	
Pelikan M600 1989	piston plastic	LPn: 121 LCp: 125 LPs: 149	DBa: 12.1 DTh: 11.0 D38: 11.0 D25: 9.2	WPn: 9 WCp: 4.5 CGu: 67.5 CGp: 87.5	PsCp: 1.19 CgPn: 0.57 CgPs: 0.59 VBa: 9.0	
Pelikan M650 1998	piston resin, vermeil cap	LPn: 122 LCp: 133 LPs: 151	DBa: 12.8 DTh: 11.8 D38: 11.9 D25: 9.8	WPn: 10.5 WCp: 11.5 CGu: 70 CGp: 97.5	PsCp: 1.13 CgPn: 0.58 CgPs: 0.65 VBa: 10.0	
Pelikan M600 2001	piston celluloid	LPn: 123 LCp: 133 LPs: 153	DBa: 12.8 DTh: 11.8 D38: 11.7 D25: 9.9	WPn: 11.25 WCp: 6.5 CGu: 70 CGp: 92.5	PsCp: 1.15 CgPn: 0.57 CgPs: 0.60 VBa: 10.0	
Pelikan M800 2002	piston resin, GP cap rings	LPn: 126 LCp: 141 LPs: 163	DBa: 13.4 DTh: 12.6 D38: 12.3 D25: 10.8	WPn: 20.25 WCp: 8.25 CGu: 80 CGp: 95	PsCp: 1.15 CgPn: 0.63 CgPs: 0.58 VBa: 11.0	
Pelikan M1000 2003	piston resin, GP cap rings	LPn: 135 LCp: 146 LPs: 173	DBa: 14.4 DTh: 13.5 D38: 12.1 D25: 12.6	WPn: 23.25 WCp: 9 CGu: 85 CGp: 100	PsCp: 1.18 CgPn: 0.62 CgPs: 0.58 VBa: 13.5	
Pelikan Celebry 590 2002	C/C metal, lacquer, GP cap	LPn: 131 LCp: 142 LPs: 158	DBa: 10.9 DTh: D38: 9.6 D25: 8.7	WPn: 26 WCp: 10.75 CGu: 67.5 CGp: 90	PsCp: 1.11 CgPn: 0.52 CgPs: 0.56 VBa: 6.5	
Penol No. 7 1935	button celluloid, GF cap rings	LPn: 119 LCp: 129 LPs: 151	DBa: 11.8 DTh: 11.3 D38: 11.2 D25: 9.3	WPn: 10 WCp: 6.25 CGu: 65 CGp: 90	PsCp: 1.17 CgPn: 0.56 CgPs: 0.60 VBa: 8.5	
Platinum Celluloid 2000	C/C celluloid	LPn: 117 LCp: 136 LPs: 151	DBa: 12.1 DTh: 11.6 D38: 10.9 D25: 10.2	WPn: 11 WCp: 10.5 CGu: CGp:	PsCp: 1.11 CgPn: CgPs: VBa: 8.0	
Platinum Maki-E Crane 2000	C/C plastic	LPn: 122 LCp: 137 LPs: 150	DBa: 11.2 DTh: D38: 10.3 D25: 9.4	WPn: 13 WCp: 8 CGu: CGp:	PsCp: 1.10 CgPn: CgPs: VBa: 7.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

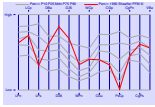
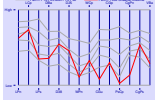
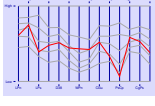
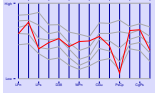
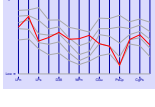
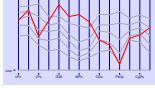


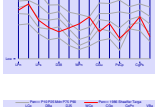
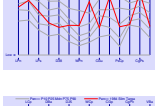
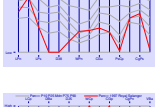
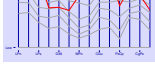
Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Sailor Magellan 2000	C/C celluloid GP cap ring	LPn: 119 LCp: 139 LPs: 150	DBa: 12.4 DTh: 11.7 D38: 11.6 D25: 9.6	WPn: 12.75 WCp: 9 CGu: 60 CGp: 82.5	PsCp: 1.08 CgPn: 0.50 CgPs: 0.54 VBa: 9.0	
Sailor 1911M 2004	C/C acrylic, GP cap band	LPn: 117 LCp: 135 LPs: 148	DBa: 12.3 DTh: 11.8 D38: 11.6 D25: 9.8	WPn: 12.25 WCp: 7.5 CGu: 57.5 CGp: 77.5	PsCp: 1.09 CgPn: 0.50 CgPs: 0.53 VBa: 8.5	
Sheaffer Full GF Overlay 1924	lever GF overlay, GF section fpPP2/147	LPn: 104 LCp: 115 LPs: 149	DBa: 10.5 DTh: 9.8 D38: 9.8 D25: 8.3	WPn: 12.25 WCp: 6.5 CGu: 62.5 CGp: 85	PsCp: 1.30 CgPn: 0.61 CgPs: 0.57 VBa: 5.5	
Sheaffer Junior Flattop 1925	lever Radite	LPn: 99 LCp: 112 LPs: 141	DBa: 10.5 DTh: 9.8 D38: 9.9 D25: 8.3	WPn: 8 WCp: 5.75 CGu: 57.5 CGp: 85	PsCp: 1.26 CgPn: 0.59 CgPs: 0.60 VBa: 5.5	
Sheaffer Senior Balance 1929	lever celluloid	LPn: 125 LCp: 145 LPs: 151	DBa: 11.5 DTh: 10.8 D38: 10.8 D25: 9.0	WPn: 11.25 WCp: 6.5 CGu: 65 CGp: 87.5	PsCp: 1.04 CgPn: 0.52 CgPs: 0.57 VBa: 8.5	
Sheaffer Oversize Balance 1930	lever celluloid	LPn: 117 LCp: 136 LPs: 155	DBa: 13.1 DTh: 12.5 D38: 12.3 D25: 10.3	WPn: 12 WCp: 8.75 CGu: 62.5 CGp: 87.5	PsCp: 1.14 CgPn: 0.53 CgPs: 0.56 VBa: 10.0	
Sheaffer Senior Balance 1931	lever celluloid	LPn: 120 LCp: 138 LPs: 159	DBa: 11.6 DTh: 10.9 D38: 10.8 D25: 8.5	WPn: 9 WCp: 6 CGu: 62.5 CGp: 90	PsCp: 1.15 CgPn: 0.52 CgPs: 0.56 VBa: 8.0	
Sheaffer 3-25 Junior Balance 1932	lever celluloid, GF trim largest blue-black fpW1/109 #3	LPn: 116 LCp: 139 LPs: 153	DBa: 10.2 DTh: 9.8 D38: 9.8 D25: 8.1	WPn: 8.75 WCp: 5.5 CGu: 62.5 CGp: 87.5	PsCp: 1.11 CgPn: 0.55 CgPs: 0.56 VBa: 6.0	
Sheaffer Oversize Balance 1936	lever celluloid	LPn: 121 LCp: 140 LPs: 163	DBa: 13.2 DTh: 12.6 D38: 12.2 D25: 10.3	WPn: 11 WCp: 8 CGu: CGp:	PsCp: 1.16 CgPn: CgPs: VBa: 10.0	
Sheaffer Balance II 2000	C/C plastic	LPn: 124 LCp: 145 LPs: 162	DBa: 12.4 DTh: 11.9 D38: 11.6 D25: 9.6	WPn: 15.5 WCp: 5.5 CGu: 65 CGp: 82.5	PsCp: 1.12 CgPn: 0.53 CgPs: 0.50 VBa: 9.5	
Sheaffer Tuckaway 1000 1947	plunger celluloid	LPn: 96 LCp: 114 LPs: 131	DBa: 11.4 DTh: 10.8 D38: 10.8 D25: 9.9	WPn: 8.5 WCp: 4.5 CGu: CGp:	PsCp: 1.15 CgPn: CgPs: VBa: 6.0	
Sheaffer Crest 1952	Snorkel plastic, GF cap	LPn: 124 LCp: 140 LPs: 162	DBa: 10.9 DTh: 10.2 D38: 10.2 D25: 8.9	WPn: WCp: CGu: CGp:	PsCp: 1.16 CgPn: CgPs: VBa: 7.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Sheaffer PFM III 1960	Snorkel plastic, GP cap band	LPn: 119 LCp: 135 LPs: 141	DBa: 12.6 DTh: D38: 12.4 D25: 11.2	WPn: 13 WCp: 8.5 CGu: 65 CGp: 85	PsCp: 1.05 CgPn: 0.54 CgPs: 0.59 VBa: 9.5	
Sheaffer Lifetime Imperial 1964	C/C plastic, GP band	LPn: 119 LCp: 136 LPs: 143	DBa: 10.8 DTh: D38: 10.7 D25: 9.7	WPn: 7 WCp: 7 CGu: 55 CGp: 82.5	PsCp: 1.05 CgPn: 0.46 CgPs: 0.58 VBa: 6.5	
Sheaffer Triumph Imperial 1968	TD GF overlay fpW1/123 #4	LPn: 118 LCp: 137 LPs: 146	DBa: 11.7 DTh: D38: 10.6 D25: 9.6	WPn: 15.75 WCp: 8.75 CGu: 67.5 CGp: 85	PsCp: 1.07 CgPn: 0.58 CgPs: 0.58 VBa: 7.5	
Sheaffer Silver Imperial 1970	TD full SS overlay fpW1/123 #6	LPn: 118 LCp: 137 LPs: 146	DBa: 11.7 DTh: D38: 10.7 D25: 9.5	WPn: 17.25 WCp: 10 CGu: 70 CGp: 87.5	PsCp: 1.07 CgPn: 0.59 CgPs: 0.60 VBa: 7.5	
Sheaffer Triumph Imperial 1992	C/C GP cap, GP barrel # 2797 fpW1/128 #12	LPn: 119 LCp: 137 LPs: 148	DBa: 11.7 DTh: D38: 10.8 D25: 9.7	WPn: 16.5 WCp: 10.25 CGu: 65 CGp: 85	PsCp: 1.08 CgPn: 0.55 CgPs: 0.57 VBa: 7.5	
Sheaffer Legacy I 1996	TD metal, lacquer RP cap, GP band	LPn: 121 LCp: 139 LPs: 149	DBa: 12.8 DTh: D38: 12.5 D25: 11.4	WPn: 23.75 WCp: 12.75 CGu: 65 CGp: 85	PsCp: 1.07 CgPn: 0.54 CgPs: 0.56 VBa: 9.5	
Sheaffer Legacy I 1996	TD full SS overlay GP cap band	LPn: 121 LCp: 138 LPs: 148	DBa: 12.6 DTh: D38: 12.4 D25: 11.2	WPn: 25 WCp: 13.5 CGu: CGp:	PsCp: 1.07 CgPn: CgPs: VBa: 9.0	
Sheaffer Legacy II Heritage 2003	C/C full SS overlay	LPn: 120 LCp: 138 LPs: 146	DBa: 12.5 DTh: D38: 12.4 D25: 11.3	WPn: 28 WCp: 13 CGu: 70 CGp: 85	PsCp: 1.06 CgPn: 0.59 CgPs: 0.58 VBa: 9.0	
Sheaffer Targa #1004 1976	C/C full SS overlay, CP clip fpUS/128	LPn: 120 LCp: 135 LPs: 153	DBa: 11.2 DTh: D38: 9.7 D25: 9.4	WPn: 16.5 WCp: 11 CGu: 62.5 CGp: 90	PsCp: 1.13 CgPn: 0.53 CgPs: 0.58 VBa: 6.5	
Sheaffer Targa 1986	C/C metal, lacquer Regency Stripe	LPn: 120 LCp: 135 LPs: 157	DBa: 11.3 DTh: D38: 9.8 D25: 9.3	WPn: 14.5 WCp: 14 CGu: 62.5 CGp: 100	PsCp: 1.16 CgPn: 0.53 CgPs: 0.64 VBa: 7.5	
Sheaffer Slim Targa 1984	C/C GP metal No. 1005 hallmarked	LPn: 114 LCp: 135 LPs: 142	DBa: 8.5 DTh: D38: 7.7 D25: 7.6	WPn: 11.5 WCp: 6.25 CGu: 62.5 CGp: 82.5	PsCp: 1.05 CgPn: 0.54 CgPs: 0.57 VBa: 4.0	
Sheaffer Royal Selangor 1997	C/C pewter overlay Asia Series Bamboo	LPn: 125 LCp: 147 LPs: 179	DBa: 12.0 DTh: 12.0 D38: 10.7 D25: 9.9	WPn: 22.5 WCp: 19.25 CGu: 77.5 CGp: 110	PsCp: 1.22 CgPn: 0.63 CgPs: 0.61 VBa: 8.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Wahl-Eversharp No. 4 Wahl Pen 1922	lever GF metal casing	LPn: 110 LCp: 119 LPs: 156	DBa: 10.3 DTh: 9.6 D38: 9.5 D25: 8.0	WPn: 10.75 WCp: 8.5 CGu: 65 CGp: 95	Pscp: 1.31 CgPn: 0.60 CgPs: 0.61 VBa: 5.5	
Wahl-Eversharp Ringtop 1931	lever celluloid, 3 GF cap rings No. 2 size	LPn: 100 LCp: 111 LPs: 145	DBa: 10.8 DTh: 9.9 D38: 9.8 D25: 8.3	WPn: 7 WCp: 6.25 CGu: 57.5 CGp: 90	Pscp: 1.30 CgPn: 0.59 CgPs: 0.61 VBa: 5.5	
Wahl-Eversharp Doric, No. 4 size 1935	lever celluloid, GF cap band fpUS/147	LPn: 121 LCp: 138 LPs: 161	DBa: 12.5 DTh: 11.8 D38: 11.8 D25: 9.2	WPn: 10 WCp: 6.25 CGu: 67.5 CGp: 92.5	Pscp: 1.17 CgPn: 0.56 CgPs: 0.58 VBa: 9.5	
Wahl-Eversharp Doric, No. 3 Size 1936	lever celluloid, GF trim fpUS/147	LPn: 116 LCp: 132 LPs: 154	DBa: 11.2 DTh: 10.2 D38: 10.3 D25: 8.5	WPn: 8.5 WCp: 6 CGu: 62.5 CGp: 90	Pscp: 1.17 CgPn: 0.55 CgPs: 0.58 VBa: 7.5	
Wahl-Eversharp Doric, No. 4 size 1937	lever celluloid, GF cap band Gold Seal fpPP2/164	LPn: 118 LCp: 127 LPs: 149	DBa: 12.4 DTh: 11.7 D38: 11.5 D25: 9.2	WPn: 9.5 WCp: 5.25 CGu: 62.5 CGp: 85	Pscp: 1.17 CgPn: 0.54 CgPs: 0.57 VBa: 9.0	
Wahl-Eversharp Doric, No. 2 size 1936	lever celluloid No. 2 size 12 sided	LPn: 101 LCp: 112 LPs: 136	DBa: 11.3 DTh: 10.0 D38: 9.9 D25: 8.6	WPn: 7 WCp: 5 CGu: 57.5 CGp: 80	Pscp: 1.22 CgPn: 0.57 CgPs: 0.59 VBa: 6.5	
Wahl-Eversharp Skyline, Size 1 1943	lever celluloid, GF cap overlay	LPn: 117 LCp: 122 LPs: 131	DBa: 11.5 DTh: 10.5 D38: 10.5 D25: 9.1	WPn: 8.5 WCp: 10 CGu: 57.5 CGp: 82.5	Pscp: 1.07 CgPn: 0.50 CgPs: 0.62 VBa: 7.5	
Wahl-Eversharp Skyline, Size 2 1945	lever celluloid, GF cap band GF derby	LPn: 118 LCp: 127 LPs: 141	DBa: 11.6 DTh: 10.8 D38: 10.8 D25: 9.2	WPn: 8.25 WCp: 8 CGu: 57.5 CGp: 87.5	Pscp: 1.11 CgPn: 0.50 CgPs: 0.61 VBa: 7.5	
Wahl-Eversharp Skyline, Size 3 1945	lever celluloid, GF cap ring	LPn: 129 LCp: 134 LPs: 145	DBa: 11.7 DTh: 10.8 D38: 9.9 D25: 8.9	WPn: 9.25 WCp: 7 CGu: 67.5 CGp: 90	Pscp: 1.08 CgPn: 0.52 CgPs: 0.61 VBa: 9.0	
Waterman 2 1905	ED BCHR, SG barrel bands straight cap Canada	LPn: 128 LCp: 136 LPs: 162	DBa: 8.6 DTh: D38: 9.0 D25: 7.2	WPn: 5 WCp: 1 CGu: 70 CGp: 80	Pscp: 1.19 CgPn: 0.54 CgPs: 0.49 VBa: 5.0	
Waterman 3 1895	ED BCHR, GF barrel bands straight cap	LPn: 128 LCp: 135 LPs: 161	DBa: 8.6 DTh: D38: 8.8 D25: 7.0	WPn: 5 WCp: 1 CGu: 67.5 CGp: 80	Pscp: 1.20 CgPn: 0.54 CgPs: 0.50 VBa: 4.5	
Waterman 12 1905	ED BCHR, GF barrel bands clipless	LPn: 122 LCp: 136 LPs: 173	DBa: 9.8 DTh: D38: 8.8 D25: 7.8	WPn: 6.25 WCp: 3 CGu: 65 CGp: 90	Pscp: 1.27 CgPn: 0.54 CgPs: 0.52 VBa: 6.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

Pscp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Waterman 12 1925	ED RRHR, clipless Red Ripple	LPn: 124 LCp: 134 LPs: 174	DBa: 9.7 DTh: D38: 8.8 D25: 8.1	WPn: 6.25 WCp: 2.75 CGu: 67.5 CGp: 90	PsCp: 1.30 CgPn: 0.54 CgPs: 0.52 VBa: 6.0	
Waterman 13 1905	ED RMHR German silver clip	LPn: 124 LCp: 133 LPs: 173	DBa: 9.7 DTh: D38: 8.5 D25: 7.6	WPn: 6 WCp: 4 CGu: 67.5 CGp: 97.5	PsCp: 1.30 CgPn: 0.54 CgPs: 0.56 VBa: 6.0	
Waterman 14 1905	ED BCHR, GF barrel bands clipless	LPn: 126 LCp: 135 LPs: 177	DBa: 9.7 DTh: D38: 8.5 D25: 7.6	WPn: 8.5 WCp: 2.5 CGu: 67.5 CGp: 92.5	PsCp: 1.32 CgPn: 0.53 CgPs: 0.52 VBa: 6.0	
Waterman 414 1900	ED BHR, SS overlay	LPn: 126 LCp: 136 LPs: 178	DBa: 10.2 DTh: D38: 8.6 D25: 7.8	WPn: 8.5 WCp: 5.75 CGu: 72.5 CGp: 103	PsCp: 1.31 CgPn: 0.58 CgPs: 0.58 VBa: 6.5	
Waterman 15 1905	ED BCHR, SG barrel bands GF cap band, clipless	LPn: 127 LCp: 139 LPs: 180	DBa: 10.5 DTh: D38: 9.0 D25: 8.3	WPn: 7.75 WCp: 4 CGu: 70 CGp: 97.5	PsCp: 1.30 CgPn: 0.56 CgPs: 0.54 VBa: 7.0	
Waterman 16 1915	ED RMHR, clipless	LPn: 125 LCp: 135 LPs: 177	DBa: 12.2 DTh: D38: 10.5 D25: 9.7	WPn: 8.75 WCp: 3.75 CGu: 70 CGp: 92.5	PsCp: 1.31 CgPn: 0.57 CgPs: 0.53 VBa: 9.5	
Waterman 17 1905	ED BHR NP clip, no cap band #6 nib	LPn: 129 LCp: 137 LPs: 182	DBa: 13.8 DTh: D38: 11.4 D25: 9.8	WPn: 12.75 WCp: 5.75 CGu: 75 CGp: 100	PsCp: 1.33 CgPn: 0.59 CgPs: 0.54 VBa: 12.0	
Waterman 472 1917	ED BHR, SS overlay	LPn: 124 LCp: 132 LPs: 166	DBa: 11.8 DTh: 10.4 D38: 10.4 D25: 7.9	WPn: 12.25 WCp: 9.75 CGu: 70 CGp: 103	PsCp: 1.25 CgPn: 0.56 CgPs: 0.61 VBa: 9.0	
Waterman 76 1917	ED BHR	LPn: 129 LCp: 136 LPs: 175	DBa: 13.0 DTh: 12.2 D38: 11.1 D25: 9.1	WPn: 11.5 WCp: 4.75 CGu: 72.5 CGp: 95	PsCp: 1.29 CgPn: 0.57 CgPs: 0.54 VBa: 10.5	
Waterman 22 1905	ED BCHR	LPn: 111 LCp: 147 LPs: 171	DBa: 8.8 DTh: D38: 8.6 D25: 7.2	WPn: 4 WCp: 1.75 CGu: 60 CGp: 82.5	PsCp: 1.17 CgPn: 0.54 CgPs: 0.48 VBa: 4.5	
Waterman 24 1905	ED BCHR, GF barrel bands 3-fissure feed	LPn: 116 LCp: 150 LPs: 177	DBa: 9.3 DTh: D38: 9.2 D25: 7.0	WPn: 5.5 WCp: 1.5 CGu: 65 CGp: 82.5	PsCp: 1.18 CgPn: 0.56 CgPs: 0.47 VBa: 4.5	
Waterman 25 1898	ED BCHR, GF barrel bands 3-fissure feed	LPn: 118 LCp: 147 LPs: 178	DBa: 10.2 DTh: D38: 8.4 D25: 8.1	WPn: 6.75 WCp: 2 CGu: 65 CGp: 85	PsCp: 1.21 CgPn: 0.56 CgPs: 0.48 VBa: 5.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Waterman 42 Safety 1924	ED RRHR fpW1/39 #10	LPn: 123 LCp: 120 LPs: 149	DBa: 11.8 DTh: 10.5 D38: 11.2 D25: 10.5	WPn: 10.5 WCp: 2.5 CGu: 72.5 CGp: 85	Pscp: 1.24 CgPn: 0.59 CgPs: 0.56 VBa: 10.5	
Waterman 12 PSF 1914	lever BCHR clipless	LPn: 131 LCp: 136 LPs: 168	DBa: 11.1 DTh: 10.3 D38: 9.4 D25: 7.9	WPn: 10.5 WCp: 3.25 CGu: 75 CGp: 92.5	Pscp: 1.23 CgPn: 0.58 CgPs: 0.55 VBa: 8.5	
Waterman 12 1/2 PSF 1914	lever BCHR clipless	LPn: 125 LCp: 133 LPs: 167	DBa: 9.7 DTh: 8.8 D38: 8.3 D25: 7.1	WPn: 7.75 WCp: 2.5 CGu: 70 CGp: 87.5	Pscp: 1.26 CgPn: 0.57 CgPs: 0.52 VBa: 6.5	
Waterman 14 PSF 1914	lever BHR, GF barrel bands clipless	LPn: 132 LCp: 139 LPs: 172	DBa: 11.2 DTh: 10.5 D38: 10.4 D25: 8.1	WPn: 10.5 WCp: 3.5 CGu: 75 CGp: 95	Pscp: 1.23 CgPn: 0.57 CgPs: 0.55 VBa: 8.0	
Waterman 0514 PSF 1914	lever BHR, GF overlay clipless	LPn: 130 LCp: 135 LPs: 168	DBa: 12.2 DTh: 10.4 D38: 10.4 D25: 7.6	WPn: 11.5 WCp: 7.25 CGu: 72.5 CGp: 103	Pscp: 1.24 CgPn: 0.57 CgPs: 0.60 VBa: 10.0	
Waterman 15 PSF 1914	lever BHR clip	LPn: 134 LCp: 142 LPs: 179	DBa: 12.2 DTh: 11.4 D38: 10.8 D25: 8.9	WPn: 12.25 WCp: 5 CGu: 75 CGp: 100	Pscp: 1.26 CgPn: 0.57 CgPs: 0.55 VBa: 10.0	
Waterman 16 PSF 1914	lever BCHR clipless, no cap ring	LPn: 136 LCp: 144 LPs: 178	DBa: 13.1 DTh: 12.5 D38: 11.0 D25: 9.9	WPn: 13.5 WCp: 4.75 CGu: 77.5 CGp: 97.5	Pscp: 1.24 CgPn: 0.58 CgPs: 0.55 VBa: 11.5	
Waterman 52 1924	lever RRHR clipless SG cap ring	LPn: 130 LCp: 136 LPs: 172	DBa: 11.2 DTh: 10.3 D38: 10.4 D25: 8.3	WPn: 10.25 WCp: 4 CGu: 70 CGp: 95	Pscp: 1.26 CgPn: 0.55 CgPs: 0.55 VBa: 8.5	
Waterman 52 1931	lever celluloid	LPn: 121 LCp: 127 LPs: 158	DBa: 11.1 DTh: 10.3 D38: 10.3 D25: 8.2	WPn: 9 WCp: 4.5 CGu: 67.5 CGp: 92.5	Pscp: 1.25 CgPn: 0.56 CgPs: 0.58 VBa: 7.5	
Waterman 52 1/2 1924	lever BCHR, NP lever clipless	LPn: 128 LCp: 135 LPs: 166	DBa: 9.7 DTh: 9.2 D38: 9.1 D25: 6.7	WPn: 7.25 WCp: 3 CGu: 70 CGp: 92.5	Pscp: 1.23 CgPn: 0.55 CgPs: 0.55 VBa: 6.5	
Waterman 0552 1923	lever BHR, GF overlay	LPn: 130 LCp: 140 LPs: 173	DBa: 11.7 DTh: 10.7 D38: 10.3 D25: 8.2	WPn: 12 WCp: 10 CGu: 72.5 CGp: 108	Pscp: 1.24 CgPn: 0.57 CgPs: 0.61 VBa: 9.5	
Waterman 0552 1/2 LEC 1923	lever BHR, GF overlay	LPn: 126 LCp: 129 LPs: 165	DBa: 9.6 DTh: 8.9 D38: 9.3 D25: 6.8	WPn: 12 WCp: 5.25 CGu: 77.5 CGp: 97.5	Pscp: 1.27 CgPn: 0.61 CgPs: 0.59 VBa: 6.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

Pscp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Waterman 452 1925	lever BHR, SS overlay SS clip	LPn: 128 LCp: 137 LPs: 168	DBa: 11.7 DTh: 10.6 D38: 10.5 D25: 8.5	WPn: 13.5 WCp: 10 CGu: 70 CGp: 103	PsCp: 1.22 CgPn: 0.56 CgPs: 0.61 VBa: 9.5	
Waterman 452 1/2 1925	lever BHR, SS overlay SS clip	LPn: 127 LCp: 136 LPs: 167	DBa: 10.2 DTh: 8.9 D38: 9.1 D25: 7.4	WPn: 11 WCp: 8.5 CGu: 70 CGp: 103	PsCp: 1.22 CgPn: 0.56 CgPs: 0.62 VBa: 7.0	
Waterman 51V 1925	lever RRHR, NP trim no clip, #1 nib	LPn: 97 LCp: 108 LPs: 135	DBa: 9.7 DTh: 8.9 D38: 9.2 D25: 8.7	WPn: 6 WCp: 2.75 CGu: 52.5 CGp: 70	PsCp: 1.26 CgPn: 0.54 CgPs: 0.53 VBa: 4.5	
Waterman 52V 1925	lever BCHR, GF cap band clipless	LPn: 105 LCp: 112 LPs: 145	DBa: 11.3 DTh: 10.7 D38: 10.7 D25: 8.2	WPn: 7.5 WCp: 4.25 CGu: 60 CGp: 82.5	PsCp: 1.29 CgPn: 0.57 CgPs: 0.57 VBa: 6.5	
Waterman 52 1/2V 1925	lever RRHR clipless	LPn: 104 LCp: 109 LPs: 141	DBa: 9.7 DTh: 9.0 D38: 9.0 D25: 7.3	WPn: 6.5 WCp: 3.25 CGu: 60 CGp: 80	PsCp: 1.29 CgPn: 0.57 CgPs: 0.57 VBa: 4.5	
Waterman 452 1/2V LEC 1925	lever Full SS overlay, ringtop Hand Engraved Vine fpPP2/166	LPn: 87 LCp: 92 LPs: 122	DBa: 9.6 DTh: 9.0 D38: 9.3 D25: 7.4	WPn: 8 WCp: 5 CGu: 55 CGp: 72.5	PsCp: 1.32 CgPn: 0.63 CgPs: 0.60 VBa: 3.5	
Waterman 54 1925	lever RRHR, GF cap ring	LPn: 130 LCp: 136 LPs: 180	DBa: 11.2 DTh: 10.7 D38: 10.4 D25: 7.9	WPn: 10.25 WCp: 5 CGu: 70 CGp: 95	PsCp: 1.32 CgPn: 0.55 CgPs: 0.53 VBa: 8.5	
Waterman 55 1925	lever RRHR, GF cap ring	LPn: 137 LCp: 140 LPs: 182	DBa: 12.2 DTh: 11.4 D38: 9.6 D25: 8.3	WPn: 12.5 WCp: 6 CGu: 75 CGp: 103	PsCp: 1.30 CgPn: 0.56 CgPs: 0.56 VBa: 10.0	
Waterman 56 1925	lever RRHR, GF cap ring fpW1/39 #14	LPn: 134 LCp: 142 LPs: 176	DBa: 13.0 DTh: 12.4 D38: 11.9 D25: 9.3	WPn: 13.5 WCp: 6.75 CGu: 72.5 CGp: 97.5	PsCp: 1.24 CgPn: 0.54 CgPs: 0.55 VBa: 11.5	
Waterman 5 1927	lever RRHR, GF cap ring	LPn: 119 LCp: 128 LPs: 163	DBa: 11.4 DTh: 10.7 D38: 10.7 D25: 7.4	WPn: 9.5 WCp: 5.75 CGu: 65 CGp: 95	PsCp: 1.27 CgPn: 0.55 CgPs: 0.58 VBa: 8.0	
Waterman 7 1927	lever RRHR, GF cap ring	LPn: 136 LCp: 143 LPs: 178	DBa: 12.1 DTh: 11.3 D38: 10.4 D25: 8.6	WPn: 12 WCp: 6.5 CGu: 75 CGp: 103	PsCp: 1.25 CgPn: 0.55 CgPs: 0.57 VBa: 10.0	
Waterman 7 1934	lever celluloid, GF cap band fpPP2/175	LPn: 129 LCp: 139 LPs: 173	DBa: 11.9 DTh: 11.4 D38: 10.9 D25: 8.6	WPn: 11.25 WCp: 6.75 CGu: 70 CGp: 100	PsCp: 1.25 CgPn: 0.55 CgPs: 0.57 VBa: 9.0	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Brand/Model/Year	Filler/Finish/Details	Lengths	Diameters	Weight/CG	Derived	Graph
Waterman 94 1934	lever celluloid	LPn: 120 LCp: 127 LPs: 156	DBa: 12.5 DTh: 11.3 D38: 11.1 D25: 8.8	WPn: 11 WCp: 6 CGu: 65 CGp: 92.5	PsCp: 1.23 CgPn: 0.55 CgPs: 0.58 VBa: 9.0	
Waterman 3 1937	lever celluloid	LPn: 122 LCp: 128 LPs: 157	DBa: 11.2 DTh: 10.6 D38: 10.5 D25: 8.3	WPn: 9.25 WCp: 4.5 CGu: 70 CGp: 90	PsCp: 1.23 CgPn: 0.57 CgPs: 0.57 VBa: 8.0	
Waterman Lady Patricia De Luxe 1936	lever celluloid, CP trim De Luxe Ink-Vue fpPP2/177 BJ3502	LPn: 101 LCp: 110 LPs: 139	DBa: 11.1 DTh: 10.4 D38: 10.5 D25: 8.7	WPn: 7.25 WCp: 6 CGu: 60 CGp: 90	PsCp: 1.27 CgPn: 0.59 CgPs: 0.64 VBa: 6.0	
Waterman 100 Year Pen 1943	lever celluloid, GF cap band fpPP2/212 standard size	LPn: 122 LCp: 131 LPs: 158	DBa: 12.0 DTh: 11.2 D38: 11.2 D25: 8.8	WPn: 11 WCp: 6.5 CGu: 67.5 CGp: 90	PsCp: 1.20 CgPn: 0.55 CgPs: 0.57 VBa: 8.5	
Waterman Man 100 Opera 1990	C/C carbon fiber, metal	LPn: 133 LCp: 144 LPs: 170	DBa: 12.6 DTh: D38: 10.8 D25: 10.2	WPn: 26 WCp: 8.5 CGu: 70 CGp: 90	PsCp: 1.18 CgPn: 0.54 CgPs: 0.53 VBa: 9.5	
Waterman Man 200 Rhapsody 1997	C/C metal, plastic overlay	LPn: 128 LCp: 140 LPs: 165	DBa: 11.1 DTh: D38: 9.8 D25: 12.0	WPn: 20 WCp: 10.75 CGu: 70 CGp: 95	PsCp: 1.17 CgPn: 0.56 CgPs: 0.58 VBa: 7.0	
Waterman Preface 1995	C/C GP metal overlay	LPn: 122 LCp: 134 LPs: 149	DBa: 10.5 DTh: D38: 9.4 D25: 8.7	WPn: 18 WCp: 8.5 CGu: 67.5 CGp: 87.5	PsCp: 1.11 CgPn: 0.56 CgPs: 0.59 VBa: 6.5	
Waterman Expert II 1999	C/C metal, lacquer	LPn: 125 LCp: 141 LPs: 151	DBa: 12.7 DTh: D38: 10.5 D25: 9.7	WPn: 21.75 WCp: 10.75 CGu: 75 CGp: 90	PsCp: 1.07 CgPn: 0.61 CgPs: 0.59 VBa: 9.0	
Waterman Phileas 2000	C/C metal, plastic overlay	LPn: 126 LCp: 136 LPs: 147	DBa: 12.4 DTh: D38: 11.5 D25: 9.8	WPn: 16.5 WCp: 7 CGu: 72.5 CGp: 87.5	PsCp: 1.08 CgPn: 0.57 CgPs: 0.59 VBa: 8.5	
Waterman L'Etalon 2001	C/C SS overlay	LPn: 125 LCp: 140 LPs: 150	DBa: 13.0 DTh: D38: 11.1 D25: 10.0	WPn: 21.5 WCp: 14.5 CGu: 67.5 CGp: 92.5	PsCp: 1.08 CgPn: 0.55 CgPs: 0.62 VBa: 9.5	
Waterman Liaison 2001	C/C ebonite, metal GP cap band	LPn: 129 LCp: 143 LPs: 162	DBa: 12.3 DTh: D38: 11.1 D25: 10.6	WPn: 28.25 WCp: 15 CGu: 75 CGp: 95	PsCp: 1.13 CgPn: 0.58 CgPs: 0.59 VBa: 11.0	
Wirt Wirt Lever Fill 1931	lever celluloid, GF trim	LPn: 101 LCp: 113 LPs: 139	DBa: 10.8 DTh: 9.8 D38: 9.8 D25: 8.7	WPn: 7.5 WCp: 4.25 CGu: 60 CGp: 82.5	PsCp: 1.23 CgPn: 0.59 CgPs: 0.59 VBa: 5.5	

LPn: Length of pen, uncapped (mm)
LCp: Length of pen, capped (mm)
LPs: Length of pen, posted (mm)

DBa: Max. barrel diameter (mm)
DTh: Diameter at cap threads (mm)
D38: Diameter, 38mm above nib tip (mm)
D25: Diameter, 25mm above nib tip (mm)

WPn: Weight of pen, uncapped (g)
WCp: Weight of cap (g)
CGu: Center of gravity, uncapped (mm)
CGp: Center of gravity, posted (mm)

PsCp = LPs / LCp
CgPn = CGu / LPn
CgPs = CGp / LPs
VBa: Estimated Barrel Volume (cc)

Measurement Procedures

This section describes my techniques for collecting the 11 physical measurements in the data table. There is also some information about the accuracy of the measurement data.

Lengths For the first 120 pens, I worked this way: The lengths LPn, LCp, and LPs were measured with an engineer's triangular ruler, using its 1/50in scale. The pen — uncapped, capped, or posted — was trapped between two sliding blocks machined from acrylic stock. One block was positioned at 0 on the ruler, the other at the end of the pen. This procedure, plus my nearsightedness, allows me to read lengths that fall between the marks on the 1/50in scale. That is, the accuracy was at least 0.02in and often closer to 0.01in.

Currently, I use a digital caliper with an accuracy of 0.001in. When I switched to this caliper, I remeasured 20 pens and found no differences (at the resolution reported in the data table) compared to my earlier procedure.

Note that lengths, especially those measured from the tip of the nib, can have much variability from one example to another of the same pen. That is particularly true of older pens where the seating of nib and feed, as well as the specific nib, can have a large impact. In addition, there may be distinct variants of the 'same' pen, having slightly different measurements. For example, a pen with a jewel at the end of the barrel will usually be slightly longer than the same pen without that jewel.

The data table reports these lengths rounded to the nearest multiple of 1mm (0.05in).

Diameters For the first 120 pens, I worked this way: The diameters DBa, DTh, D15, and D10 were measured by a two-step process. First, I captured a diameter with a pair of locking outside-reading caliper. Second, I read the opening of the locked caliper with an inside-reading Vernier caliper whose Vernier scale is marked in increments of 0.001in.

Currently, I just use the digital caliper mentioned above, whose accuracy is 0.001in. As with lengths, I found no discrepancies (at the resolution of the data table) for 20 remeasured pens, as compared to my earlier procedure.

Note that diameters are tricky to measure accurately, for a variety of reasons. In addition, I'm reluctant to risk damaging the surface of someone's pen by embracing it too enthusiastically with a caliper. As a result, the real accuracy of the diameters is somewhat less than 0.001in, even though I can read to at least 0.001in resolution using either the Vernier or digital caliper.

The data table reports these diameters rounded to the nearest multiple of 0.1mm (0.005in).

Weights The weights WPN and WCp are currently measured with a digital scale having a resolution of 0.1g. The scale is recalibrated with a known standard weight at the outset of each session.

For about the first 75 pens, I used a simple postal scale, whose resolution seemed no better than about 0.5g. Once I switched to the digital scale, I re-measured 25 pens and their caps and compared the two sets of 50 weights. The postal scale was surprisingly accurate: 50% of the discrepancies between postal and digital scale weights were 0.2g or smaller, 80% did not exceed 0.5g. I had once intended to distinguish the two sources of weight data, but decided that there was little reason to do so.

The data table reports these weights rounded to the nearest multiple of 0.25g (0.01oz).

Centers of Gravity The balance points CGu and CGp are measured using the engineer's triangular ruler and a thin flat ruler marked in 0.1in increments. The triangular ruler is placed perpendicular to, and on top of the flat ruler with its upper apex at the 0 mark on the flat ruler. I then balance the pen —

uncapped or capped — on the upper apex of the triangular ruler; the thickness of the apex is about twice that of a credit card. Nearsightedness then permits me to peer straight down at the tip of the nib, and read distance from the center of gravity along the flat ruler to a resolution of at least 0.05in.

The data table reports these balance points rounded to the nearest multiple of 2.5mm (0.1in).

Finally, note that all measurement procedures are repeated, typically until I get two consecutive identical values. I increase the number of replications when I get inconsistent results.

Approximating Barrel Volume

Many pens are designed as a distinct barrel with a section and nib attached at one end, a vintage Parker Duofold being a good example. The size of that barrel is quite a strong visual attribute — it's one of the things that makes a pen *seem* big. If the barrel were exactly cylindrical (and a Duofold's barrel is nearly that), then calculating barrel volume would be easy.

Of course, many pens do not have a distinct barrel — the whole pen is (visually) one continuous piece of material; the Pelikan P1 and the Montblanc 121 provide good examples of this type of design. And other pens do have a distinct barrel, but it is strongly tapered rather than having parallel sides; a 1929–1930 Sheaffer Senior Balance is a good example. The derived measure VBa is an attempt to estimate the volume of a pen's barrel in the face of such obstacles.

First, I have measured barrel length (accurate to at least 1mm) for all but a handful of the pens with a distinct barrel. Second, among those same pens the barrel stops, on average, about 36.8mm above the tip of the nib. In other words, for those pens with a distinct barrel, I (almost always) have the length of the barrel and the two diameters DBa and D38, the latter being near the section joint. If the barrel were a cylinder, we would have $D38 = DBa$, but of course that seldom happens. However, I also know that D38 is approximately 90% of DBa, a formula that is surprisingly accurate. The first bit of approximation is then to take 95% of DBa — roughly, the midpoint of DBa and D38 — as a *typical* barrel diameter.

But what about the pens that have no distinct barrel? Well, once again, use imputation (glorified guesswork). For pens that do have a distinct barrel, measured barrel length can be estimated rather accurately from two values that are available for all pens: Approximately,

$$\text{Barrel Length} = 0.8 \text{ LPn} - 1.3 \text{ D25}.$$

For pens without a distinct barrel, just apply that same formula to get an approximate 'barrel' length.

So, here's the formula for the derived attribute VBa:

$$\text{VBa} = 3.14159 (0.475 \text{ DBa})^2 (\text{Barrel Length})$$

where Barrel Length is, when necessary, imputed from LPn and D25 (as shown above). The result is then converted into cc (i.e., mL) and rounded to the nearest 0.5cc.

Obviously, there is a good deal of guesswork involved in VBa, so that it is much less precise than the other attributes reported in the data table. Still, I think it provides a useful indicator of the extent to which a pen *looks* big.

Unit Conversion Rulers

Earlier editions of this document provided both English and metric versions of the table of measurements. I have since opted to provide only the metric table, in the interest of a smaller filesize — a concern that grows in importance with the number of pens included. The formulae for converting a value in metric units into English units are simple enough,

$$(\text{value in inches}) = (\text{value in millimeters}) / 25.4$$

$$(\text{value in ounces}) = (\text{value in grams}) / 28.35,$$

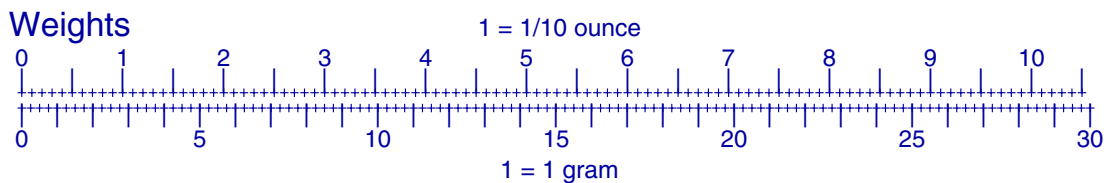
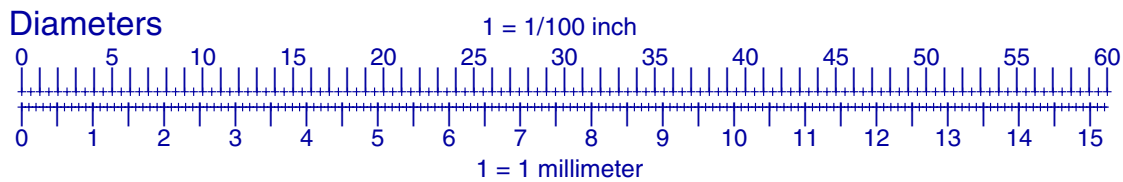
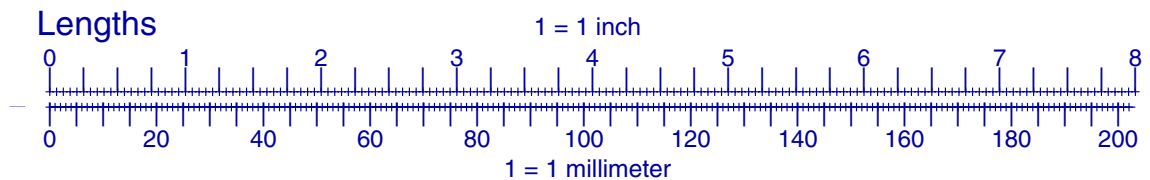
but some readers may prefer to avoid such arithmetic.

For those readers, I offer the conversion rulers below — one each for length, diameter, and weight measurements. Each ruler has a metric scale on the bottom and an English unit scale on the top. In each case, the metric scales have tick marks that match the resolution of the measurements in the data table; the English unit scales have ticks that match the resolution of the now-departed English units table.

So turn on Acrobat's *Zoom* toolbar, click the magnifying glass icon, and enlarge the appropriate region of a ruler: You should be able to read the English unit equivalent of a metric length, diameter, or weight to the exact same resolution provided by the earlier English unit table.

Example: The data table shows the capped length of a 1924 Waterman 52 as 136mm. Using the Lengths ruler below, you should arrive at 5.35in — exactly the length shown in the old English unit table.

Hint: You may wish to split the Acrobat window vertically into two panes, so that you can keep the rulers visible while scrolling through the data table.



Statistical Graphs of Pen Measurements

The graphs embedded in the data table show the status of a particular pen on each of 14 quantifiable attributes. The graphs on the pages that follow examine 12 of those dimensions, one at a time, and show how the current group of 204 pens distribute themselves. The horizontal axis of each graph shows values of a specific attribute. Plotted along that axis are many vertical lines (*spikes*), one at each distinct value of the attribute in the current group of pens. The height of each spike portrays the relative frequency of occurrence (the density) of values in that region of the horizontal axis. Put differently, each spike is positioned over a distinct value of the attribute, and the height of the spike shows the prevalence (in the current group of pens) of nearby values. So, where many similar values are crowded together, the spikes are tall; where values are few and far between, the spikes are short. (In the field of statistics, these are known as *density* graphs.)

In the background of each graph, you'll see five faint grey lines. Reading left to right, those lines appear at the 10th, 25th, 50th, 75th, and 90th percentiles of the values of the attribute. That is, the grey lines correspond exactly to the background grey traces in the graphs embedded in the data table. So, if you wish, you can recover the numeric values represented by the grey traces in the data table graphs.

For example, click the link below to enlarge the density graph for the attribute LPs, the length of the pen with cap posted.

- [Density Graph of Posted Length](#)

(Looks like a mountain stage in the Tour de France, doesn't it?) There are 158 distinct values of LPs among the current crop of pens; the graph has a spike positioned over each of those distinct values. Notice how the spikes grow taller as they become more crowded: The taller the spike, the more densely packed the values of LPs in that region.

The grey reference lines indicate that the mythical median pen has a posted length of about 154mm. Half the pens have posted lengths between about 147mm (the 25th percentile) and 165mm (the 75th percentile), and 80% of the posted lengths fall between about 142mm and 175mm (the 10th and 90th percentiles)..

Note also that this particular 'mountain stage' includes four peaks, known in statistics as *modes* — four values of LPs near which pens tend to cluster. The leftmost peak (mode) is at about 148mm: Many pens have a posted length near 148mm. A vintage Pelikan 400, a vintage Sheaffer Imperial, and a Waterman Phileas have that sort of posted length.

Moving rightward, the next peak is at about 157mm. Pens with that sort of posted length include the Montblanc 146, Pelikan 100, and Sheaffer Targa. The third peak is near 163mm, a posted length like that of the Duofold International, Pelikan M800, and Waterman Liaison. The rightmost peak occurs near 174mm, a posted length close to that of the Duofold Centennial, Pelikan M1000, and Waterman 52. One message of the graph is that posted lengths close to those four values (especially, those near 148mm) tend to predominate in this group of pens — you might say there are four 'types' of pens, in terms of LPs.

Click the link below to enlarge the density graph for the attribute VBa, the estimated barrel volume.

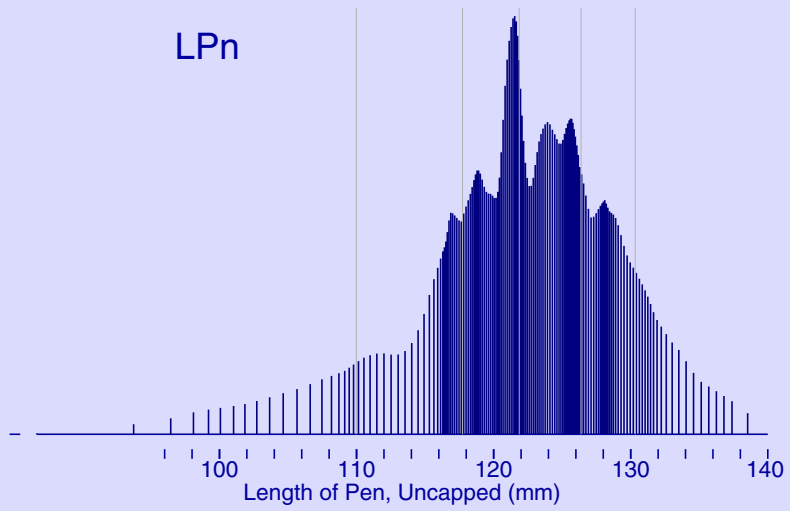
- [Density Graph of Estimated Barrel Volume](#)

You should see five distinct (or maybe six) peaks this time — five or six rather different types of pens, in terms of barrel volume. The rightmost of those peaks is located near 10.25cc, a barrel volume characteristic of the Aurora Optima, Pelikan M600, and Waterman 55. The leftmost peak occurs near 6.25cc; representative pens in that region include the Filcao Tukano, Sheaffer Tuckaway, and Waterman 12.

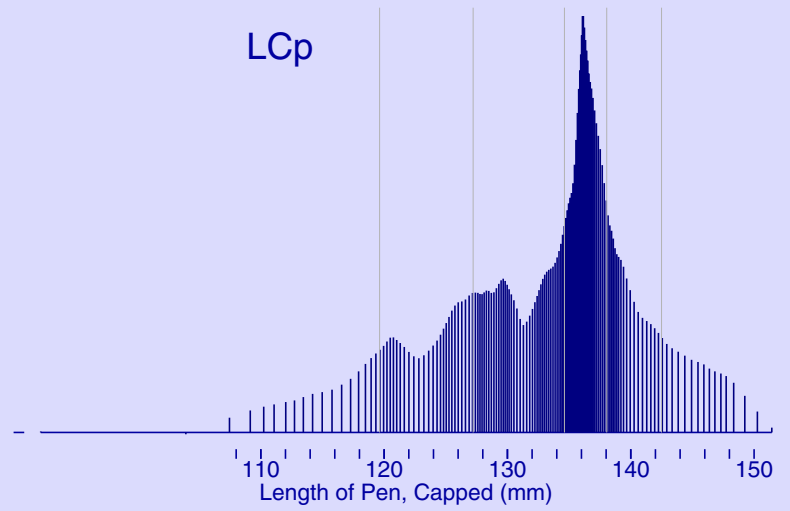
Between those two positions, there are three or perhaps four more peaks (modes) at about 7.25cc, 8.25cc, 9.5cc, and perhaps 8.75cc. And lots of pens are concentrated near the median volume, about 8.4cc. Some representative pens in that region are the Montblanc 144, the Parker Duofold International, and the (full size) Parker “51”.

For the aficionados: The heights of the spikes show a nonparametric density estimate obtained by local smoothing. The window width of the smoother was deliberately set to be narrow, so as to preserve evidence of multimodality at the expense of greater noise than would typically be desirable in a density estimate.

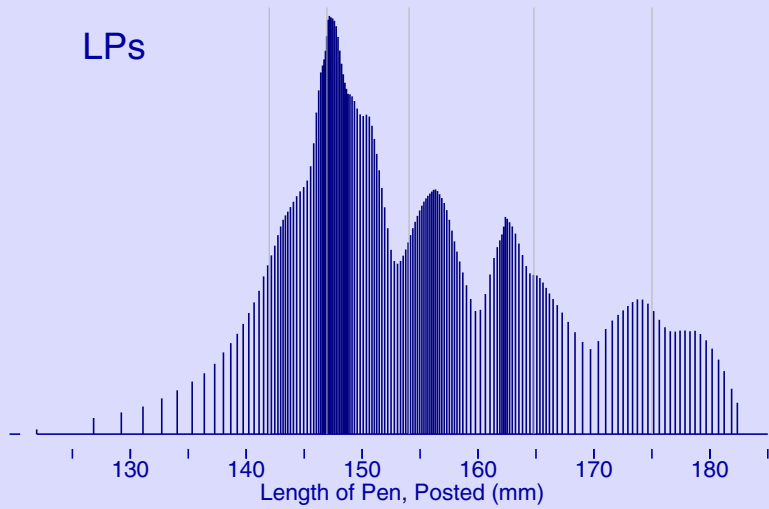
LPn



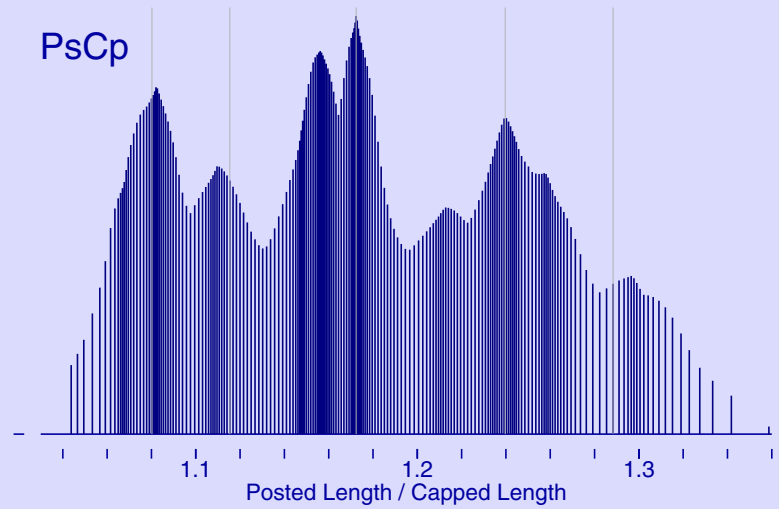
LCp



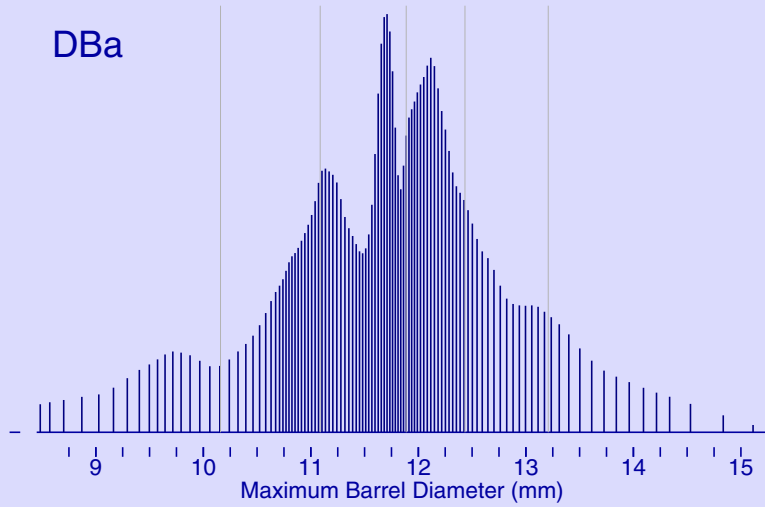
LPs



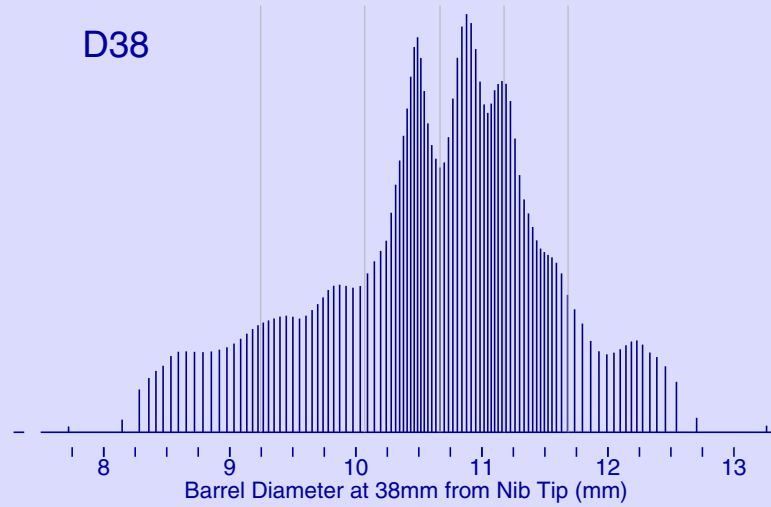
PsCp



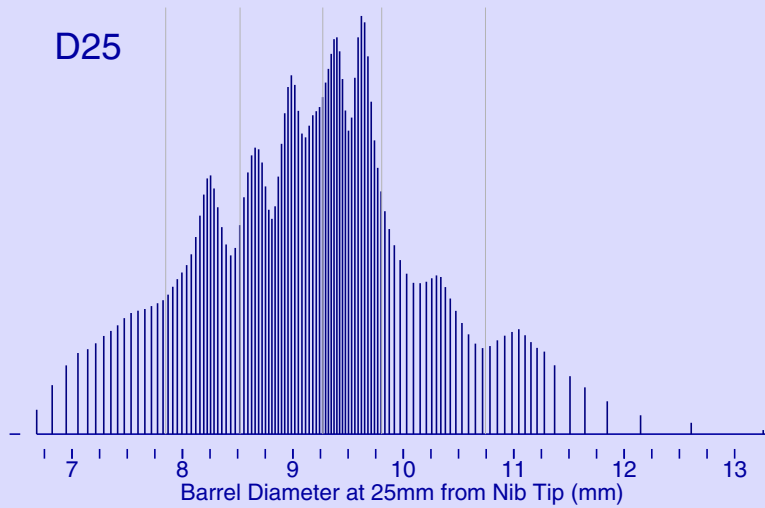
DBa



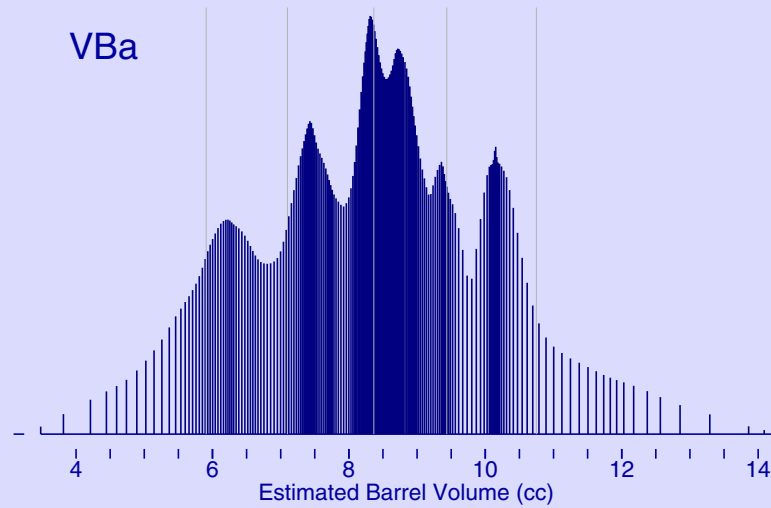
D38



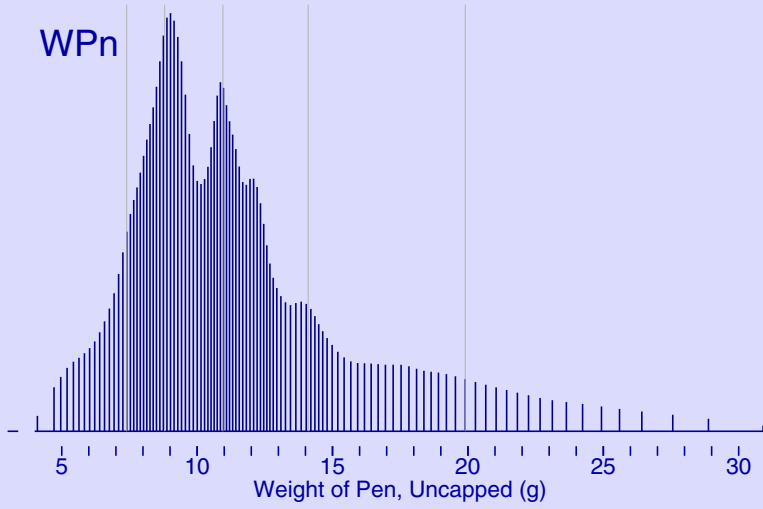
D25



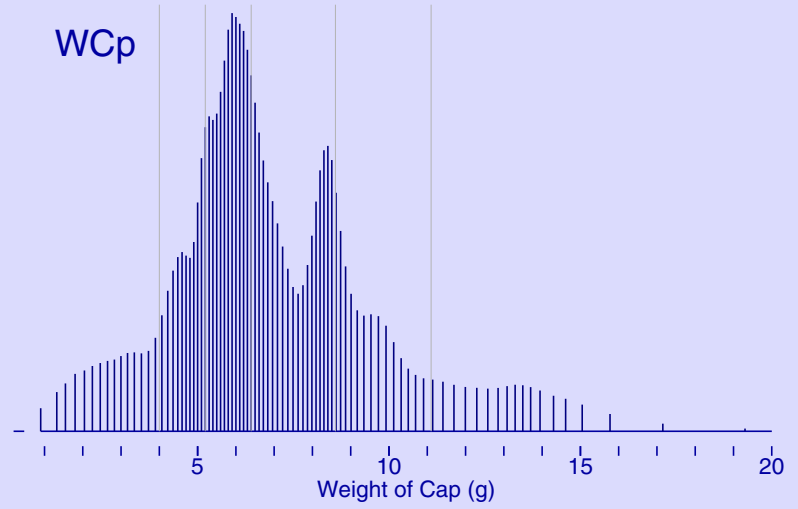
VBa



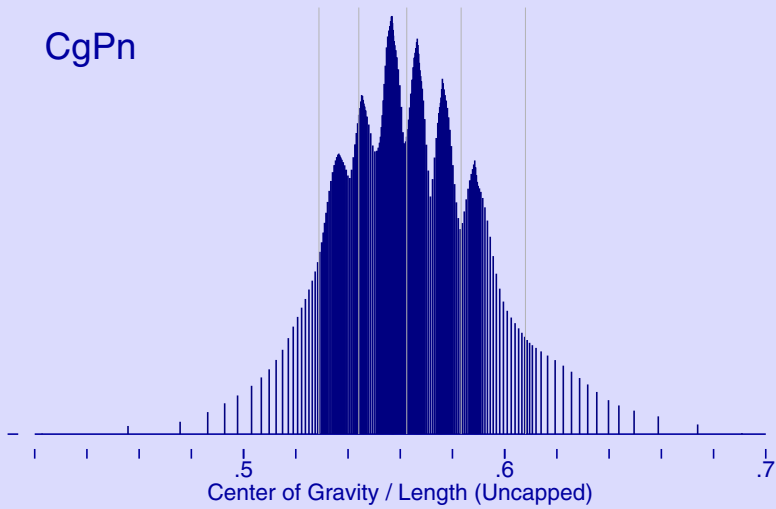
WPn



WCp



CgPn



CgPs

