

New US Mens Brannock Sizing

Designing Barleycorn Shoe Last Sizes in $\frac{2}{3}$ IT (Paris Point) Increments
Shoehorning the Barleycorn System into the Paris Point System

This makes the Original **Brannock Device**® work better by reducing the Toe Room percentage variation from 1.87% to 0.49%, an $\sim\frac{3}{4}$ reduction for **US** sizes $5\frac{1}{2}$ through 15 corresponding to **Foot** lengths of $9\frac{1}{6}$ " to $12\frac{1}{3}$ " respectively. It also produces more accurate and consistent size labeling between the Barleycorn and Paris Point systems.

Brannock Size		$\frac{1}{2}$ Barleycorn Last Inc. $\frac{1}{6}$ "	$\frac{2}{3}$ Paris Point Last Inc. 0.175 "	Attribution (BY)	
$5\frac{1}{2}$		$\frac{2}{3}$ " , 7.273%	0.632 " , 6.895%	Ex: 8/40$\frac{2}{3}$/254/95	JSG™
15		$\frac{2}{3}$ " , 5.405%	0.790 " , 6.406%	Ex: 8D/40$\frac{2}{3}$M/7F	JSG™
Difference		1.868%	0.489%	Shoe Size Label	
Size Labels (Shoes)			I.P. Factor		
Brnk	IT	UK	\sim ToeRoom	$6\frac{2}{3}\%$	$(\text{Foot.in} + \frac{1}{6}) \div 0.9525$ [1/0.9525 \approx +5%]
			Foot.in	M P	Last.cm $\Rightarrow \frac{2}{3}\text{cm}^2$ MondoPoint Last Increment
$5\frac{1}{2}/37\frac{1}{3}/$	$4\frac{1}{3}$		$9\frac{1}{6}$	233 $\frac{1}{3}$	24 $\frac{8}{9}$
6 /38 /	$4\frac{13}{15}$		$9\frac{1}{3}$	237 $\frac{1}{2}$	25 $\frac{1}{3}$
$6\frac{1}{2}/38\frac{2}{3}/$	$5\frac{2}{5}$		$9\frac{1}{2}$	241 $\frac{2}{3}$	25 $\frac{7}{9}$
7 /39 $\frac{1}{3}$ /	$5\frac{14}{15}$		$9\frac{2}{3}$	245 $\frac{5}{6}$	26 $\frac{2}{9}$
$7\frac{1}{2}/40 /$	$6\frac{7}{15}$		$9\frac{5}{6}$	250	26 $\frac{2}{3}$
8 /40$\frac{2}{3}$/	7		10	254 $\frac{1}{6}$	27 $\frac{1}{9}$
$8\frac{1}{2}/41\frac{1}{3}/$	$7\frac{8}{15}$		$10\frac{1}{6}$	258 $\frac{1}{3}$	27 $\frac{5}{9}$
9 /42 /	$8\frac{1}{15}$		$10\frac{1}{3}$	262 $\frac{1}{2}$	28
$9\frac{1}{2}/42\frac{2}{3}/$	$8\frac{3}{5}$		$10\frac{1}{2}$	266 $\frac{2}{3}$	28 $\frac{4}{9}$
10 /43 $\frac{1}{3}$ /	$9\frac{2}{15}$		$10\frac{2}{3}$	270 $\frac{5}{6}$	28 $\frac{8}{9}$
$10\frac{1}{2}/44 /$	$9\frac{2}{3}$		$10\frac{5}{6}$	275	29 $\frac{1}{3}$
11 /44 $\frac{2}{3}$ /	$10\frac{1}{5}$		11	279 $\frac{1}{6}$	29 $\frac{7}{9}$
$11\frac{1}{2}/45\frac{1}{3}/$	$10\frac{11}{15}$		$11\frac{1}{6}$	283 $\frac{1}{3}$	30 $\frac{2}{9}$
12 /46 /	$11\frac{4}{15}$		$11\frac{1}{3}$	287 $\frac{1}{2}$	30 $\frac{2}{3}$
$12\frac{1}{2}/46\frac{2}{3}/$	$11\frac{4}{5}$		$11\frac{1}{2}$	291 $\frac{2}{3}$	31 $\frac{1}{9}$
13 /47 $\frac{1}{3}$ /	$12\frac{1}{3}$		$11\frac{2}{3}$	295 $\frac{5}{6}$	31 $\frac{5}{9}$
$13\frac{1}{2}/48 /$	$12\frac{13}{15}$		$11\frac{5}{6}$	300	32
14 /48 $\frac{2}{3}$ /	$13\frac{2}{5}$		12	304 $\frac{1}{6}$	32 $\frac{4}{9}$
$14\frac{1}{2}/49\frac{1}{3}/$	$13\frac{14}{15}$		$12\frac{1}{6}$	308 $\frac{1}{3}$	32 $\frac{8}{9}$
15 /50 /	$14\frac{7}{15}$		$12\frac{1}{3}$	312 $\frac{1}{2}$	33 $\frac{1}{3}$
Brnk	IT	UK	Foot.in	Ft.mm	Last.cm $\Rightarrow \frac{2}{3}\text{cm}^2$ MondoPoint Last Increment
Increment			$\frac{1}{6}$ "	$4\frac{1}{6}$	$4\frac{4}{9}\text{cm}$

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BY: Size Conversion by **JSG™** (Attribution)

ND: No Derivative Works means do not change numerical relationships between sizing systems. **Last** design fit must correspond to specified **Foot** length for each size, labeled **Width** and its typical **Metatarsal Girth** (Ball of Foot Circumference).

The next page has 4"×1" **Avery US** Mens Brannock Box Labels using $\sim 6\frac{2}{3}\%$ ($\frac{1}{6}$ " +5%) Toe Room.

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Foot	U.K.	US Brannock	E.U.	Last
9 ¹ / ₆ "	4¹/₃	5¹/₂	37¹/₃	24 ⁸ / ₉
Length	6 ⁷ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			233 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10 ⁵ / ₆ "	9²/₃	10¹/₂	44	29 ¹ / ₃
Length	8 ¹ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			275 mondopoint

Foot	U.K.	US Brannock	E.U.	Last
9 ¹ / ₃ "	4¹³/₁₅	6	38	25 ¹ / ₃
Length	7 ⁰ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			237 ¹ / ₂ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11"	10¹/₅	11	44²/₃	29 ⁷ / ₉
Length	8 ² / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			279 ¹ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
9 ¹ / ₂ "	5²/₅	6¹/₂	38²/₃	25 ⁷ / ₉
Length	7 ¹ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			241 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11 ¹ / ₆ "	10¹¹/₁₅	11¹/₂	45¹/₃	30 ² / ₉
Length	8 ³ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			283 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
9 ² / ₃ "	5¹⁴/₁₅	7	39¹/₃	26 ² / ₉
Length	7 ² / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			245 ⁵ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11 ¹ / ₃ "	11⁴/₁₅	12	46	30 ² / ₃
Length	8 ⁴ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			287 ¹ / ₂ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
9 ⁵ / ₆ "	6⁷/₁₅	7¹/₂	40	26 ² / ₃
Length	7 ³ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			250 mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11 ¹ / ₂ "	11⁴/₅	12¹/₂	46²/₃	31 ¹ / ₉
Length	8 ⁵ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			291 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10"	7	8	40²/₃	27 ¹ / ₉
Length	7 ⁴ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			254 ¹ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11 ² / ₃ "	12¹/₃	13	47¹/₃	31 ⁵ / ₉
Length	8 ⁶ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			295 ⁵ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10 ¹ / ₆ "	7⁸/₁₅	8¹/₂	41¹/₃	27 ⁵ / ₉
Length	7 ⁵ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			258 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
11 ⁵ / ₆ "	12¹³/₁₅	13¹/₂	48	32
Length	8 ⁷ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			300 mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10 ¹ / ₃ "	8¹/₁₅	9	42	28
Length	7 ⁶ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			262 ¹ / ₂ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
12"	13²/₅	14	48²/₃	32 ⁴ / ₉
Length	9 ⁰ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			304 ¹ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10 ¹ / ₂ "	8³/₅	9¹/₂	42²/₃	28 ⁴ / ₉
Length	7 ⁷ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			266 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
12 ¹ / ₆ "	13¹⁴/₁₅	14¹/₂	49¹/₃	32 ⁸ / ₉
Length	9 ¹ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			308 ¹ / ₃ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
10 ² / ₃ "	9²/₁₅	10	43¹/₃	28 ⁸ / ₉
Length	8 ⁰ / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			270 ⁵ / ₆ mondopoint

Foot	U.K.	US Brannock	E.U.	Last
12 ¹ / ₃ "	14⁷/₁₅	15	50	33 ¹ / ₃
Length	9 ² / ₈	M	IT	cm
~6 ² / ₃ %	Size Conversion by JSG™			312 ¹ / ₂ mondopoint

Copy Ruler Image to Clip Board and Paste into Image Editor. Set Print D.P.I. to 323¹/₃H×304⁴/₅V (for 7¹/₂"×13") and Print on 8¹/₂"×14" Legal Size Paper or CardStock. After printing check to see if the 300mm mark measures 300mm. Cut Along Dotted Line at Top and Place on a Board with a RightAngle BackStop.

A 60 to 140 mm scale to measure width is provided. Dividing the width by the length a percentage can be obtained and referenced to the Approximate Width table. e.g. 100 × Width ÷ Length The table's values are derived from the [BBB Online Table](#) that is the Brannock standard width table, 3/16" between widths and 1/16" width increment between 1/2 sizes centered on a **US8**.

Note: Actual ruler markings are scaled to MondoPoint labeling providing a consistent 6²/₃% toe room across the entire size range. The inch markings in **Gray** are a very close approximation and are the correct Foot length for the associated Brannock sizes. Best alignment occurs at: 8³/₅/9¹/₂/42²/₃, -0.012% Errors at each end: 3⁴/₅/ 5/36²/₃, +0.248% 14⁷/₁₅/15/50, -0.245% These errors are <1/4% at each end, well within normal manufacturing tolerances and undetectable.

127/304.8DPI

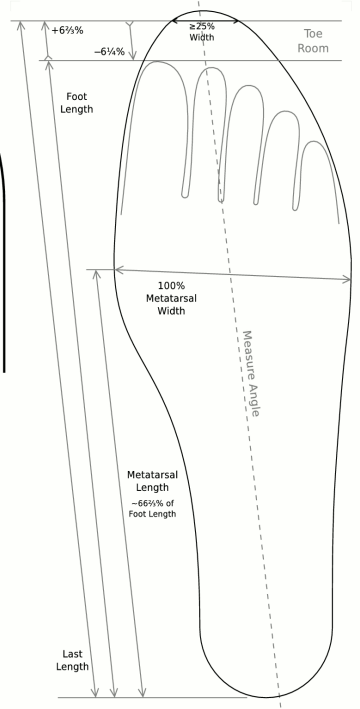
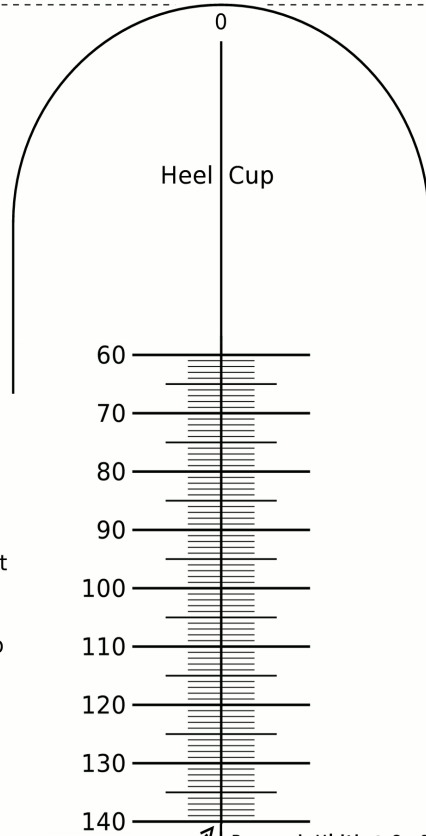
New US Mens Brannock Scale Barleycorn Universal™ Foot Ruler

Measuring feet at the end of the day will produce the most accurate size and best overall fit.

Place heel against backstop and position the angle of the foot to obtain longest measurement using the longest toe.

After measuring length for size choose your normal width if available otherwise go up or down in size to compensate.

There is a scale to measure width and a percentage can be calculated using the foot length.



Toe Room : 6²/₃%

$$0.9375 \Rightarrow \frac{1}{X} \Rightarrow 1.06 \quad (-6\frac{2}{3}\% \quad +6\frac{2}{3}\%)$$

$$\begin{aligned} \text{Last.cm} &= \text{IT} + 1\frac{1}{2} \\ \text{Foot.cm} &= \text{IT} + 1\frac{1}{3} \\ \text{Last.cm} &= \text{Last.cm} \times 0.9375 \\ &= \text{MondoPoint} \div 10 \\ \text{Foot.in} &= \text{IT} \div 4 - \frac{1}{8} \\ \text{Girth} &\approx 2\frac{1}{2} \times \text{Width} \end{aligned}$$

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$$\% = \frac{100 \times \text{Width}}{\text{Length}}$$

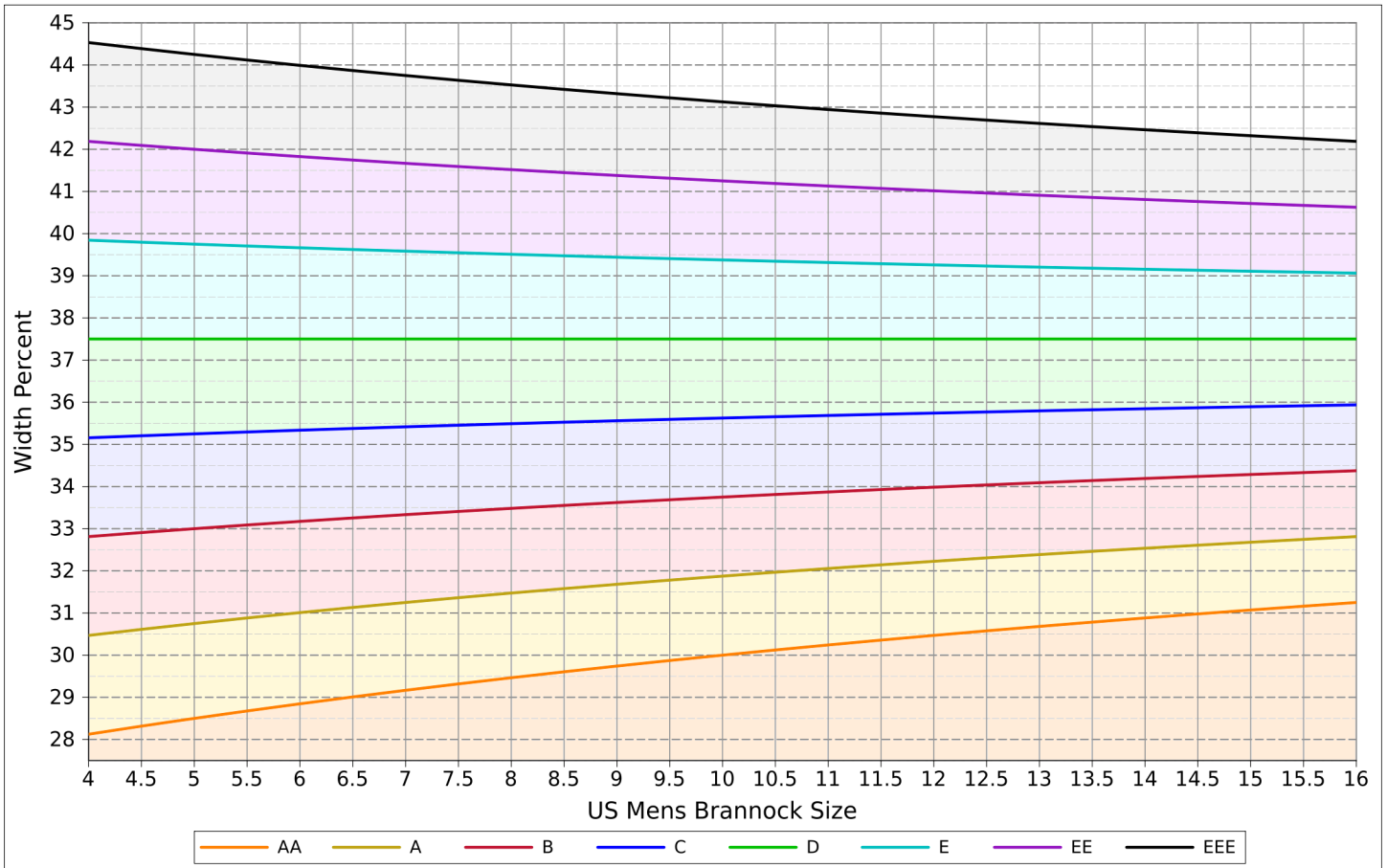
Brannock Width @ Sz 9 ¹ / ₂	
32 ¹ / ₂ %	X Slim A
33 ¹ / ₄ %	Slim B B
35 ³ / ₂ %	Narrow C D
37 ¹ / ₂ %	Medium D F
39 ² / ₇ %	Wide E H
41 ¹ / ₄ %	X Wide 2E J
42 ² / ₇ %	XX Wide 3E
44 ³ / ₄ %	XXX Wide 4E

37¹/₂% width is accurate for all sizes. Width accuracy decreases for a size the further away it is from size 9¹/₂ with the greatest deviation for the largest and smallest sizes. Best for sizes 8 to 11, otherwise see chart on next page.

UK	Brnk	IT	Mondo Point	8"	10"	12"	Mondo Point	IT	Brnk	UK
3 ⁵ / ₅	2	32 ² / ₃	204 ¹ / ₆	8"			208 ¹ / ₃	33 ¹ / ₃	2 ¹ / ₂	1 ¹ / ₁₅
1 ² / ₃	3	34	212 ¹ / ₂	8 ¹ / ₃ "			216 ² / ₃	34 ² / ₃	3 ¹ / ₂	2 ¹ / ₅
1 ¹¹ / ₁₅	4	35 ¹ / ₃	220 ⁵ / ₆	8 ² / ₃ "			225	36	4 ¹ / ₂	3 ⁴ / ₁₅
3 ⁴ / ₅	5	36 ² / ₃	229 ¹ / ₆	9"			233 ¹ / ₃	37 ¹ / ₃	5 ¹ / ₂	4 ¹ / ₃
4 ¹³ / ₁₅	6	38	237 ¹ / ₂	9 ¹ / ₃ "			241 ² / ₃	38 ² / ₃	6 ¹ / ₂	5 ² / ₅
5 ¹³ / ₁₅	7	39 ¹ / ₃	245 ⁵ / ₆	9 ² / ₃ "			250	40	7 ¹ / ₂	6 ⁷ / ₁₅
7	8	40 ² / ₃	254 ¹ / ₆	10"			258 ¹ / ₃	41 ¹ / ₃	8 ¹ / ₂	7 ⁸ / ₁₅
8 ¹ / ₁₅	9	42	262 ¹ / ₂	10 ¹ / ₃ "			266 ² / ₃	42 ² / ₃	9 ¹ / ₂	8 ³ / ₅
9 ² / ₁₅	10	43 ¹ / ₃	270 ⁵ / ₆	10 ² / ₃ "			275	44	10 ¹ / ₂	9 ² / ₅
10 ¹ / ₅	11	44 ² / ₃	279 ¹ / ₆	11"			283 ¹ / ₃	45 ¹ / ₃	11 ¹ / ₂	10 ¹¹ / ₁₅
11 ⁴ / ₁₅	12	46	287 ¹ / ₂	11 ¹ / ₃ "			291 ² / ₃	46 ² / ₃	12 ¹ / ₂	11 ⁴ / ₅
12 ¹ / ₃	13	47 ¹ / ₃	295 ⁵ / ₆	11 ² / ₃ "			300	48	13 ¹ / ₂	12 ¹³ / ₁₅
13 ² / ₅	14	48 ² / ₃	304 ¹ / ₆	12"			308 ¹ / ₃	49 ¹ / ₃	14 ¹ / ₂	13 ¹⁴ / ₁₅
14 ⁷ / ₁₅	15	50	312 ¹ / ₂	12 ¹ / ₃ "			316 ² / ₃	50 ² / ₃	15 ¹ / ₂	15
15 ⁸ / ₁₅	16	51 ¹ / ₃	320 ⁵ / ₆	12 ² / ₃ "						

Using the ruler measurements if the calculated width is **D** (Medium) then this is correct for the whole Brannock size range. Alternatively all other Brannock widths for all sizes can be realized by referencing the Width:Length percent ratio calculated from ruler measurements with the graph below.

US Mens Brannock Width Variance Graph



Size fitting reference is for the area below each width line and down to the next width line.

Above is the width variance graph and as you can see it is non-linear. Only the **D** width is a consistent **37½%** of the length across the entire size range. This is because the ½ size increment is $\frac{1}{8}$ " and the width increment for ½ size is $\frac{1}{16}$ ", $6 \div 16 = \frac{3}{8}$; $\frac{3}{8} \times 100 = 37\frac{1}{2}\%$. For scaling purposes this consistent width percentage characteristic should apply for all widths and all sizes. The standard Brannock width table is linear in respect that widths are separated by $\frac{3}{16}$ " and the width increment per ½ size is $\frac{1}{16}$ ". This linear layout of the width table does not lend itself to consistent scaling. As you can see the width % difference for an 8" foot, size 2, from **AAA** to **EEE** is 18¾% but for a 12⅓" foot, size 15, it is 12⅓%, a >6% difference. In actual manufacturing proper scaling of the Lasts will maintain the same percentage for a given width across the entire size range like the **D** width. For instance using the 1⅞% width spacing for a 10" foot, size 8, and for every ½ size, $\frac{1}{8}$ ", increments for all the widths are: **AAA** 28⅞% $\frac{1}{21.3}$ ", **AA** 30% $\frac{1}{20}$ ", **A** 31⅞% $\frac{1}{18.824}$ ", **B** 33¾% $\frac{1}{17.7}$ ", **C** 35⅞% $\frac{1}{16.842}$ ", **D** 37½% $\frac{1}{16}$ ", **E** 39⅞% $\frac{1}{15.238}$ ", **EE** 41¼% $\frac{1}{14.545}$ ", **EEE** 43⅞% $\frac{1}{13.913}$ ". Using this method allows the width to be specified as a percentage which can be referenced to a standard width marking and can be easily calculated using the width and length of the foot but the metatarsal girth, circumference around the ball of the foot, associated with the width is even more important in determining how tight the shoe width fits. The foot ruler presented here will further optimize the spacing by using an $\sim 5\frac{2}{3}\%$ factor increment, $\sqrt{37\frac{1}{2} \div 33\frac{3}{4}}$, between the widths: **AAA** 28⅞%, **AA** 30⅞%, **A** 32%, **B** 33¾%, **C** 35 $\frac{4}{7}$ %, **D** 37½%, **E** 39½%, **EE** 41⅓%, **EEE** 43⅞%, a non-linear exponential but $\sim 1\frac{1}{8}\%$ average width spacing.

Experimental! MondoPoint Length, Width & Girth Table Aligned to US Mens Brannock Scale