
# Viewer License Agreement

## You Must Read This License Agreement Before Proceeding.

This Scroll Wrap License is the Equivalent of a Shrink Wrap ⇒ Click License,
A Non-Disclosure Agreement that Creates a “Cone of Silence”.

By viewing this Document you **Permanently Release All Rights** that would allow you to restrict the **Royalty Free Use** by anyone implementing in Tools, Product and/or other Methods in whole or in part what is Defined and Originates here in this Document. This Agreement particularly **Enjoins** the viewer from: Filing any **Patents** (À La Submarine?) on said **Technology & Claims** and/or the use of any **Restrictive Instrumen**t that prevents anyone from using said **Technology & Claims** Royalty Free and without any Restrictions. This also applies to registering any **Trademarks** including but not limited to those being marked with **“™”** that Originate within this Document. **Trademarks** and **Intellectual Property** that Originate here belong to the **Author** of this Document unless otherwise noted. Transferring said **Technology** and/or **Claims** defined here without this Agreement to another Entity for the purpose of but not limited to allowing that Entity to circumvent this Agreement is Forbidden and will NOT release the Entity or the Transfer-er from Liability. Failure to Comply with this Agreement is **NOT** an Option if access to this content is desired. This Document contains **Technology & Claims** that are a **Trade Secret: Proprietary & Confidential** and that cannot be transferred to another Entity without that Entity agreeing to this “Non-Disclosure Cone of Silence” **V.L.A.** Wrapper. Combining **Other Technology** with said **Technology** and/or **Claims** by Entity is an acknowledgment that the Entity is automatically placing **Other Technology** under the Licenses listed below making this License Self-Enforcing under an agreement of Confidentiality protected by this Wrapper.

The contents of/and this Document are released under the following licenses so long as this Agreement remains attached to any and all files, papers, etc... that contain any said **Technology** and/or **Claims**. Any Product manufactured with said **Technology** and/or **Claims** must contain a brief message on packaging, e.g. “This Product contains Technology and/or Claims that are Licensed for Unrestricted and Royalty Free Use. Any knowledge gained by viewing this product may not be used to file any patents, employ any restrictions, or interfere with the manufacture, sale and use of this product”.

This Document is licensed under Creative Commons (CC BY–NC–ND 4.0) so long as this V.L.A. remains attached to the contents of this document. It may be re-distributed and hosted anywhere. The use of this technology requires **Attribution** (BY) associated with the size labeling, Package Labeling: “**eXp7™** Size Scaling by J. S. Gilstrap” & Product Labeling: “**eXp7™** by **JSG™**”. Commercial research OK during R.F.C. Non-Commercial restrictions will be lifted once the standard has become static and well defined. **ND:** No Derivative Works, will remain in effect to control the standard.

Scrolling past this page is **The Point of No Return** and Acknowledges that You have Agreed to the Terms above. If you are Unable or Unwilling to Agree to these Terms then Close this Document.

Copyright ©MMXVIII – J. S. Gilstrap – All Rights Reserved.

# Summary of Description & Claims

**Trade Secret: Proprietary & Confidetial**

**eXp7™ – an eXponential Shoe Sizing System** – A shoe sizing system that increments sizes by a percentage increase instead of a fixed increment, e.g. 1/6″ & 1/3cm for ½ size increments in the Barleycorn & Paris Point systems and, ½cm & ¾cm for the 5mm & 7½mm increments in the MondoPoint system. The increment is **7** steps per inch around a ~9⅘″, 24.85cm foot (9.3″ to 10.3″, 23.61 to 26.15cm) a non-linear progression that increases the increment value as size increases. Using 5.88% toe room the increment size at 34¼**IT**|**EU** is 1/3cm (½ size Paris Point), and at 9.3**UK** it is 1/6″ (½ size Barleycorn).

**Better Fittings & Manufacturing Efficiency** – Since this is a ratio based system it produces a more consistent and usable coverage of the sizes providing better fittings which may also reduce the number of sizes needed to cover the the same size range.

**Consistent Widths Across The Size Range Produces Easy Last Scaling** – The spacing between the Widths is also a percentage increase offering the same benefits. Similar to the Brannock width system the width spacing is 3 increments of the width increment per ½ size increment. This offers an additional division of the widths by 3 (⅓ steps) by going up or down ½ size and/or up or down in width. A ±½ size adjustment within the same width will adjust the width by ±⅓ step and a ±1 width adjustment with a ∓½ size adjustment will adjust the width by ±⅔ step. In the Brannock system a ½ size increase of foot length is 1/6″ while the width increases by 1/16″. This Width:Length ratio of **37½%** = 100 × 6 ÷ 16 (⅜) produces a consistent ratio for the **D** width across the whole size range but for all other widths this produces width spreading for the smallest sizes, an 18¾% differential, while for the largest sizes width squeezing, a 12⅙% differential, a >6% difference, graph on pg7. The width curves become more curved for the widths further away from the **D** width. This means that the width increase step becomes larger in size for the smaller sizes relatively speaking, and vice-versa, smaller width increase step for the larger sizes. By using percentage scaling this problem is eliminated. Instead of using the fixed increment values for length and width of 1/6″ & 1/16″ respectively the relationship between length & width is: **W**idth **S**pacing **F**actor = (**F**oot **I**ncrement **F**actor)³ providing a consistent percentage for all widths across the size range. Width:Length ratio percentages associated with labels are: **AAA A** 30⅛, **AA B** 31½, **A C** 32⅞, **B D** 34⅜, **C E** 35⅞, **D F** 37½, **E G** 39⅕, **EE H** 40⅞, **EEE I** 42¾. This is not as spread out so alignment with conventional width values will not line up and this can be extended to **4A** and **5E** or more.

5.88% 27÷25½ **T**oe **R**oom, 1½cm, using a 25½cm **Foot** and a 27cm **Last**, is used as the Origin and minimum average amount for Barleycorn & Paris Point sizing but more could be used. In width adjustment through a ±½ size adjustment this corresponds to 7½% & 4⅜%. If 6⅔% is used then toe room through width adjustment would be 8¼% & 5⅛% and the Barleycorn & Paris Point **Last** size specification would be greater. The **T**oe **R**oom specification does not limit toe box lengthening for styling purposes rather this is the minimum toe room requirement.

Copyright ©MMXX – R.F.C. J. S. Gilstrap – All Rights Reserved. Creative Commons (CC BY–NC–ND 4.0)
**BY: eXp7™** Size Scaling by **JSG™** (Attribution) **NC:** Non-Commercial **ND:** No Derivative Works.

# Foot Length and Equivalent Paris Point & Barleycorn Sizing using 5.88% Toe Room

### A MondoPoint eXponential Scaling Overlay

| eXp7™ Size | Weight Bearing Measurement Foot .in | Foot .mm | Last .in | Last .cm | IT\|EU ×1½ | UK 25 | M 24 | US W 22½ |
|---|---|---|---|---|---|---|---|---|
| 6x5 | 8.07 | 204.9 | 8.54 | 21.69 | 32.54 | 0.62 | 1.62 | 3.12 |
| 6x6 | 8.18 | 207.9 | 8.67 | 22.01 | 33.02 | 1 | 2 | 3½ |
| 6x7 | 8.30 | 210.9 | 8.79 | 22.33 | 33.50 | 1.38 | 2.38 | 3.88 |
| 6x8 | 8.43 | 214.0 | 8.92 | 22.66 | 33.99 | 1.77 | 2.77 | 4.27 |
| 6x9 | 8.55 | 217.2 | 9.05 | 23.00 | 34.49 | 2.16 | 3.16 | 4.66 |
| 7x0 | 8.68 | 220.4 | 9.19 | 23.33 | 35 | 2.56 | 3.56 | 5.06 |
| 7x1 | 8.80 | 223.6 | 9.32 | 23.68 | 35.51 | 2.96 | 3.96 | 5.46 |
| 7x2 | 8.93 | 226.9 | 9.46 | 24.02 | 36.04 | 3.38 | 4.38 | 5.88 |
| 7x3 | 9.06 | 230.2 | 9.60 | 24.38 | 36.57 | 3.79 | 4.79 | 6.29 |
| 7x4 | 9.20 | 233.6 | 9.74 | 24.74 | 37.10 | 4.22 | 5.22 | 6.72 |
| 7x5 | 9.33 | 237.1 | 9.88 | 25.10 | 37.65 | 4.65 | 5.65 | 7.15 |
| 7x6 | 9.47 | 240.5 | 10.03 | 25.47 | 38.20 | 5.08 | 6.08 | 7.58 |
| 7x7 | 9.61 | 244.1 | 10.17 | 25.84 | 38.76 | 5.52 | 6.52 | 8.02 |
| 7x8 | 9.75 | 247.7 | 10.32 | 26.22 | 39.33 | 5.97 | 6.97 | 8.47 |
| 7x9 | 9.89 | 251.3 | 10.48 | 26.61 | 39.91 | 6.43 | 7.43 | 8.93 |
| 8x0 | 10.04 | 255 | 10.63 | 27 | 40½ | 6.89 | 7.89 | 9.39 |
| 8x1 | 10.19 | 258.7 | 10.79 | 27.40 | 41.10 | 7.36 | 8.36 | 9.86 |
| 8x2 | 10.34 | 262.6 | 10.94 | 27.80 | 41.70 | 7.83 | 8.83 | 10.33 |
| 8x3 | 10.49 | 266.4 | 11.11 | 28.21 | 42.31 | 8.32 | 9.32 | 10.82 |
| 8x4 | 10.64 | 270.3 | 11.27 | 28.62 | 42.93 | 8.81 | 9.81 | 11.31 |
| 8x5 | 10.80 | 274.3 | 11.43 | 29.04 | 43.57 | 9.30 | 10.30 | 11.80 |
| 8x6 | 10.96 | 278.3 | 11.60 | 29.47 | 44.21 | 9.81 | 10.81 | 12.31 |
| 8x7 | 11.12 | 282.4 | 11.77 | 29.90 | 44.86 | 10.32 | 11.32 | 12.82 |
| 8x8 | 11.28 | 286.6 | 11.95 | 30.34 | 45.52 | 10.84 | 11.84 | 13.34 |
| 8x9 | 11.45 | 290.8 | 12.12 | 30.79 | 46.19 | 11.37 | 12.37 | 13.87 |
| 9x0 | 11.62 | 295.1 | 12.30 | 31.24 | 46.86 | 11.90 | 12.90 | 14.40 |
| 9x1 | 11.79 | 299.4 | 12.48 | 31.70 | 47.55 | 12.44 | 13.44 | 14.94 |
| 9x2 | 11.96 | 303.8 | 12.66 | 32.17 | 48.25 | 12.99 | 13.99 | 15.49 |
| 9x3 | 12.14 | 308.3 | 12.85 | 32.64 | 48.96 | 13.55 | 14.55 | 16.05 |
| 9x4 | 12.32 | 312.8 | 13.04 | 33.12 | 49.68 | 14.12 | 15.12 | 16.62 |
| 9x5 | 12.50 | 317.4 | 13.23 | 33.61 | 50.41 | 14.69 | 15.69 | 17.19 |

Reference values specified in mm (MondoPoint)

**F**oot **I**ncrement **F**actor = $\sqrt[10]{40½ \div 35}$ = 1.01470242408

🎩(M) or ⧗(W) as decimal.

**TR** = 27 ÷ 25½ = 1.05882352941 ; 1½cm **TR** @ 25½cm **Foot**

**Foot**.mm = 10 × **Last**.cm ÷ **TR** ; **Foot**.in = **Foot**.mm ÷ 25⅖ ; **Last**.in = **TR** × **Foot**.in

**IT**|**EU** = 1½ × **Last**.cm ; [**Mx**|**UK**|**usM**|**usW**] = **IT**|**EU** ÷ 1.27 − [25½|25|24|22½]

# Widths

**Width.mm** A Weight Bearing Measurement

| eXp7 / Size | Ⅱ AAA 30.13 A3 | Ⅲ AA 31.48 A2 | Ⅳ A 32.88 A | Ⅴ B 34.36 B | Ⅵ C 35.89 C | Ⅶ D 37.50 D | Ⅷ E 39.18 E | Ⅸ EE 40.93 E2 | Ⅹ EEE 42.76 E3 |
|---|---|---|---|---|---|---|---|---|---|
| 6x5 | 61.7 | 64.5 | 67.4 | 70.4 | 73.5 | 76.8 | 80.3 | 83.9 | 87.6 |
| 6x6 | 62.6 | 65.4 | 68.4 | 71.4 | 74.6 | 78.0 | 81.4 | 85.1 | 88.9 |
| 6x7 | 63.5 | 66.4 | 69.4 | 72.5 | 75.7 | 79.1 | 82.6 | 86.3 | 90.2 |
| 6x8 | 64.5 | 67.4 | 70.4 | 73.5 | 76.8 | 80.3 | 83.9 | 87.6 | 91.5 |
| 6x9 | 65.4 | 68.4 | 71.4 | 74.6 | 78.0 | 81.4 | 85.1 | 88.9 | 92.9 |
| 7x0 | 66.4 | 69.4 | 72.5 | 75.7 | 79.1 | 82.6 | 86.3 | 90.2 | 94.2 |
| 7x1 | 67.4 | 70.4 | 73.5 | 76.8 | 80.3 | 83.9 | 87.6 | 91.5 | 95.6 |
| 7x2 | 68.4 | 71.4 | 74.6 | 78.0 | 81.4 | 85.1 | 88.9 | 92.9 | 97.0 |
| 7x3 | 69.4 | 72.5 | 75.7 | 79.1 | 82.6 | 86.3 | 90.2 | 94.2 | 98.5 |
| 7x4 | 70.4 | 73.5 | 76.8 | 80.3 | 83.9 | 87.6 | 91.5 | 95.6 | 99.9 |
| 7x5 | 71.4 | 74.6 | 78.0 | 81.4 | 85.1 | 88.9 | 92.9 | 97.0 | 101.4 |
| 7x6 | 72.5 | 75.7 | 79.1 | 82.6 | 86.3 | 90.2 | 94.2 | 98.5 | 102.9 |
| 7x7 | 73.5 | 76.8 | 80.3 | 83.9 | 87.6 | 91.5 | 95.6 | 99.9 | 104.4 |
| 7x8 | 74.6 | 78.0 | 81.4 | 85.1 | 88.9 | 92.9 | 97.0 | 101.4 | 105.9 |
| 7x9 | 75.7 | 79.1 | 82.6 | 86.3 | 90.2 | 94.2 | 98.5 | 102.9 | 107.5 |
| 8x0 | **76.8** | **80.3** | **83.9** | **87.6** | **91.5** | **95.6** | **99.9** | **104.4** | **109.0** |
| 8x1 | 78.0 | 81.4 | 85.1 | 88.9 | 92.9 | 97.0 | 101.4 | 105.9 | 110.7 |
| 8x2 | 79.1 | 82.6 | 86.3 | 90.2 | 94.2 | 98.5 | 102.9 | 107.5 | 112.3 |
| 8x3 | 80.3 | 83.9 | 87.6 | 91.5 | 95.6 | 99.9 | 104.4 | 109.0 | 113.9 |
| 8x4 | 81.4 | 85.1 | 88.9 | 92.9 | 97.0 | 101.4 | 105.9 | 110.7 | 115.6 |
| 8x5 | 82.6 | 86.3 | 90.2 | 94.2 | 98.5 | 102.9 | 107.5 | 112.3 | 117.3 |
| 8x6 | 83.9 | 87.6 | 91.5 | 95.6 | 99.9 | 104.4 | 109.0 | 113.9 | 119.0 |
| 8x7 | 85.1 | 88.9 | 92.9 | 97.0 | 101.4 | 105.9 | 110.7 | 115.6 | 120.8 |
| 8x8 | 86.3 | 90.2 | 94.2 | 98.5 | 102.9 | 107.5 | 112.3 | 117.3 | 122.6 |
| 8x9 | 87.6 | 91.5 | 95.6 | 99.9 | 104.4 | 109.0 | 113.9 | 119.0 | 124.4 |
| 9x0 | 88.9 | 92.9 | 97.0 | 101.4 | 105.9 | 110.7 | 115.6 | 120.8 | 126.2 |
| 9x1 | 90.2 | 94.2 | 98.5 | 102.9 | 107.5 | 112.3 | 117.3 | 122.6 | 128.0 |
| 9x2 | 91.5 | 95.6 | 99.9 | 104.4 | 109.0 | 113.9 | 119.0 | 124.4 | 129.9 |
| 9x3 | 92.9 | 97.0 | 101.4 | 105.9 | 110.7 | 115.6 | 120.8 | 126.2 | 131.8 |
| 9x4 | 94.2 | 98.5 | 102.9 | 107.5 | 112.3 | 117.3 | 122.6 | 128.0 | 133.8 |
| 9x5 | 95.6 | 99.9 | 104.4 | 109.0 | 113.9 | 119.0 | 124.4 | 129.9 | 135.7 |

All values are in mm (MondoPoint)

The original Brannock Device® defines the **D Width** at **37½%** of the **Foot** length and is consistent across the whole size range. For the other widths the **Width:Length** ratio varies across the sizes and the variance is greater for the widths further away from the **D Width**. Here the **D Width**, at **37½%**, is the origin and all other widths are scaled from it using the **W**idth **S**pacing **F**actor which is defined as (**F**oot **I**ncrement **F**actor)³ ~1.04476 thus making all widths a consistent percentage across the whole size range. The Ball of Foot Metatarsal **Girth** is set to 2⅖ × **Width** in the table, a nominal value that was obtained from some foot measurements. It could vary by ±1⅖% (2.3$\bar{6}$–2.4$\bar{3}$) or more. This base 2⅖ **Girth:Width** ratio is in the ball park but could probably use some more fine tuning and can also be adjusted to desired needs e.g. larger for thicker socks. This applies to a lesser extent to the **Width** table.

# Girths

**Girth.mm ≈ 2⅖ × Width.mm**

Table Values are **Non-Weight Bearing,** (Weight Bearing Adjustment Scalar)

| | ┌Percent of Foot.mm Length | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | │┌Width Label ———> (Roman Numerals are the Preferred Width Labeling) | | | | | | | | |
| | │├> Ⅱ | Ⅲ | Ⅳ | Ⅴ | Ⅵ | Ⅶ | Ⅷ | Ⅸ | Ⅹ |
| eXp7 | │└>AAA | AA | A | B | C | D | E | EE | EEE |
| Size | └>72.30 | 75.54 | 78.92 | 82.45 | 86.14 | 90.00 | 94.03 | 98.24 | 102.6 |
| | (74¾) | (78) | (81½) | (85⅕) | (89) | (93) | (97⅙) | (101½) | (106) |
| 6x5 | 148.1 | 154.8 | 161.7 | 168.9 | 176.5 | 184.4 | 192.6 | 201.2 | 210.3 |
| 6x6 | 150.3 | 157.0 | 164.1 | 171.4 | 179.1 | 187.1 | 195.5 | 204.2 | 213.3 |
| 6x7 | 152.5 | 159.3 | 166.5 | 173.9 | 181.7 | 189.8 | 198.3 | 207.2 | 216.5 |
| 6x8 | 154.8 | 161.7 | 168.9 | 176.5 | 184.4 | 192.6 | 201.2 | 210.3 | 219.7 |
| 6x9 | 157.0 | 164.1 | 171.4 | 179.1 | 187.1 | 195.5 | 204.2 | 213.3 | 222.9 |
| 7x0 | 159.3 | 166.5 | 173.9 | 181.7 | 189.8 | 198.3 | 207.2 | 216.5 | 226.2 |
| 7x1 | 161.7 | 168.9 | 176.5 | 184.4 | 192.6 | 201.2 | 210.3 | 219.7 | 229.5 |
| 7x2 | 164.1 | 171.4 | 179.1 | 187.1 | 195.5 | 204.2 | 213.3 | 222.9 | 232.9 |
| 7x3 | 166.5 | 173.9 | 181.7 | 189.8 | 198.3 | 207.2 | 216.5 | 226.2 | 236.3 |
| 7x4 | 168.9 | 176.5 | 184.4 | 192.6 | 201.2 | 210.3 | 219.7 | 229.5 | 239.8 |
| 7x5 | 171.4 | 179.1 | 187.1 | 195.5 | 204.2 | 213.3 | 222.9 | 232.9 | 243.3 |
| 7x6 | 173.9 | 181.7 | 189.8 | 198.3 | 207.2 | 216.5 | 226.2 | 236.3 | 246.9 |
| 7x7 | 176.5 | 184.4 | 192.6 | 201.2 | 210.3 | 219.7 | 229.5 | 239.8 | 250.5 |
| 7x8 | 179.1 | 187.1 | 195.5 | 204.2 | 213.3 | 222.9 | 232.9 | 243.3 | 254.2 |
| 7x9 | 181.7 | 189.8 | 198.3 | 207.2 | 216.5 | 226.2 | 236.3 | 246.9 | 257.9 |
| 8x0 | **184.4** | **192.6** | **201.2** | **210.3** | **219.7** | **229.5** | **239.8** | **250.5** | **261.7** |
| 8x1 | 187.1 | 195.5 | 204.2 | 213.3 | 222.9 | 232.9 | 243.3 | 254.2 | 265.6 |
| 8x2 | 189.8 | 198.3 | 207.2 | 216.5 | 226.2 | 236.3 | 246.9 | 257.9 | 269.5 |
| 8x3 | 192.6 | 201.2 | 210.3 | 219.7 | 229.5 | 239.8 | 250.5 | 261.7 | 273.4 |
| 8x4 | 195.5 | 204.2 | 213.3 | 222.9 | 232.9 | 243.3 | 254.2 | 265.6 | 277.5 |
| 8x5 | 198.3 | 207.2 | 216.5 | 226.2 | 236.3 | 246.9 | 257.9 | 269.5 | 281.5 |
| 8x6 | 201.2 | 210.3 | 219.7 | 229.5 | 239.8 | 250.5 | 261.7 | 273.4 | 285.7 |
| 8x7 | 204.2 | 213.3 | 222.9 | 232.9 | 243.3 | 254.2 | 265.6 | 277.5 | 289.9 |
| 8x8 | 207.2 | 216.5 | 226.2 | 236.3 | 246.9 | 257.9 | 269.5 | 281.5 | 294.1 |
| 8x9 | 210.3 | 219.7 | 229.5 | 239.8 | 250.5 | 261.7 | 273.4 | 285.7 | 298.5 |
| 9x0 | 213.3 | 222.9 | 232.9 | 243.3 | 254.2 | 265.6 | 277.5 | 289.9 | 302.8 |
| 9x1 | 216.5 | 226.2 | 236.3 | 246.9 | 257.9 | 269.5 | 281.5 | 294.1 | 307.3 |
| 9x2 | 219.7 | 229.5 | 239.8 | 250.5 | 261.7 | 273.4 | 285.7 | 298.5 | 311.8 |
| 9x3 | 222.9 | 232.9 | 243.3 | 254.2 | 265.6 | 277.5 | 289.9 | 302.8 | 316.4 |
| 9x4 | 226.2 | 236.3 | 246.9 | 257.9 | 269.5 | 281.5 | 294.1 | 307.3 | 321.1 |
| 9x5 | 229.5 | 239.8 | 250.5 | 261.7 | 273.4 | 285.7 | 298.5 | 311.8 | 325.8 |

All values are in mm (MondoPoint)

All **Foot** measurements are taken Barefoot, Men: Thin Dress Socks, or Women: Hose. If thicker socks are intended to be worn with a particular type of shoe or boot then the Lasts from which they are made from should have a slight increase in size made to them to compensate. A given percentage increase should be established for the type of sock to be worn for each shoe or boot design. Different increases in the **Length**, **Width** & **Girth** will be needed, most for the **Girth** and least for the **Length**. These percentage increases should be applied to table values before being used for Lasts dimensions. **90.00** for the **D** **Girth** is for Non-Weight Bearing, the table values, while (93) is for Weight Bearing, a 3⅓% increase. The 3⅓% (31÷30) increase has also been applied to the other **Girth** scalars.

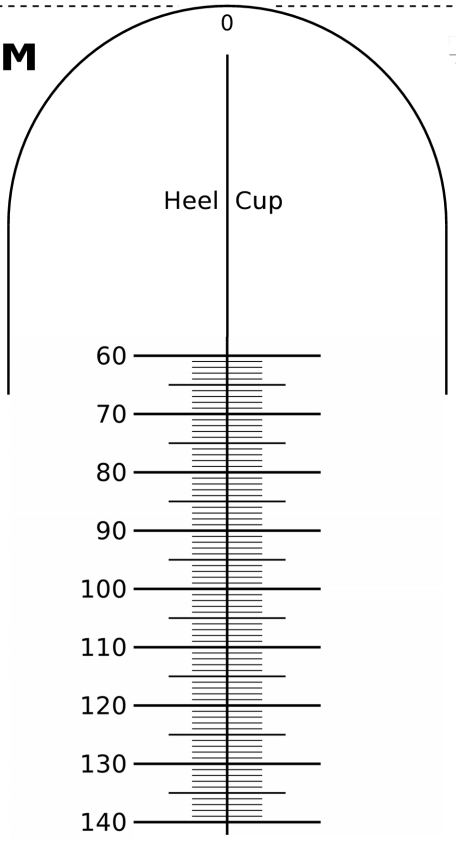
Copy Ruler Image to Clip Board and Paste into Image Editor. Set Print D.P.I. to 304.8 and Print on 8½″×14″ Legal Size Paper or Card Stock. Cut Along Dotted Line at Top and Place on a Board with a Right Angle Back Stop.

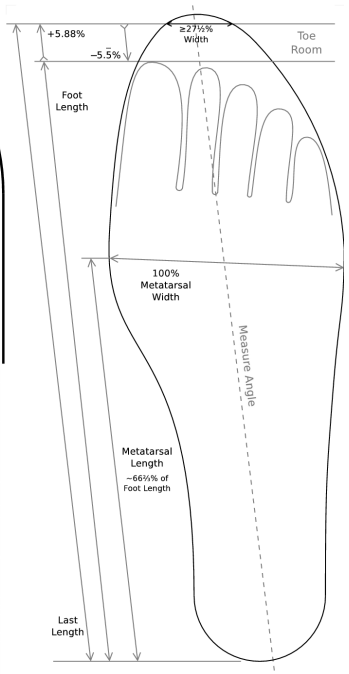
127/304.8DPI

# eXp7™

## eXponential Scale Foot Ruler

Approximate Size for Conventional Systems use 5.88% Toe Room.




Toe Room : 5.88%

$0.9\overline{4} \Rightarrow \boxed{1/x} \Rightarrow 1.0588$
(−5 5/9%) (+5.88%)

Copyright ©MMXVIII - J. S. Gilstrap
All Rights Reserved.
Creative Commons (CC BY-NC-ND 4.0)

Mearuring 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. If an accurate mm tape measure is avaliable then take Girth measurements also. Check Girth table for proper fit and adjust Size and/or Width if necessary.

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

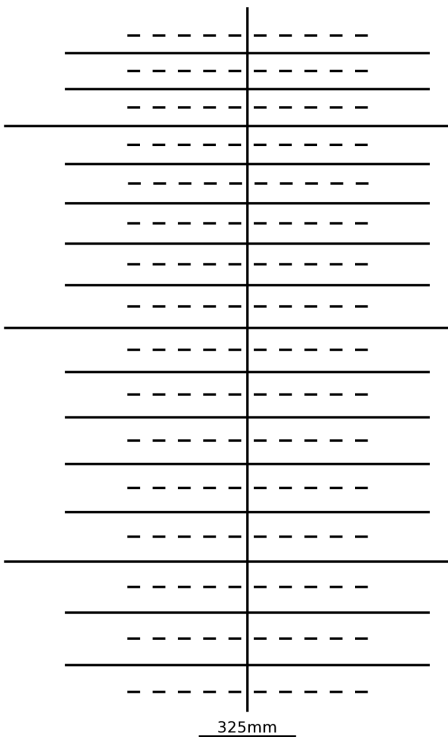
### Width Table

| | | | |
|---|---|---|---|
| 28 5/8% | 2X Slim | I | 4A |
| 30 1/8% | X Slim | II | 3A A |
| 31 1/2% | Slim | III | 2A B |
| 32 7/8% | Narrow | IV | A C |
| 34 3/8% | Meduim | V | B D |
| 35 7/8% | Meduim | VI | C E |
| 37 1/2% | Meduim | VII | D F |
| 39 1/8% | Wide | VIII | E G |
| 40 7/8% | X Wide | IX | 2E H |
| 42 3/4% | 2X Wide | X | 3E |
| 44 2/3% | 3X Wide | XI | 4E |
| 46 2/3% | 4X Wide | XII | 5E |

Mx = UK − ½
usM = UK + 1
usW = UK + 2½

Mx = IT|EU ÷ 1.27 − 25½
UK = IT|EU ÷ 1.27 − 25
usM = IT|EU ÷ 1.27 − 24
usW = IT|EU ÷ 1.27 − 22½

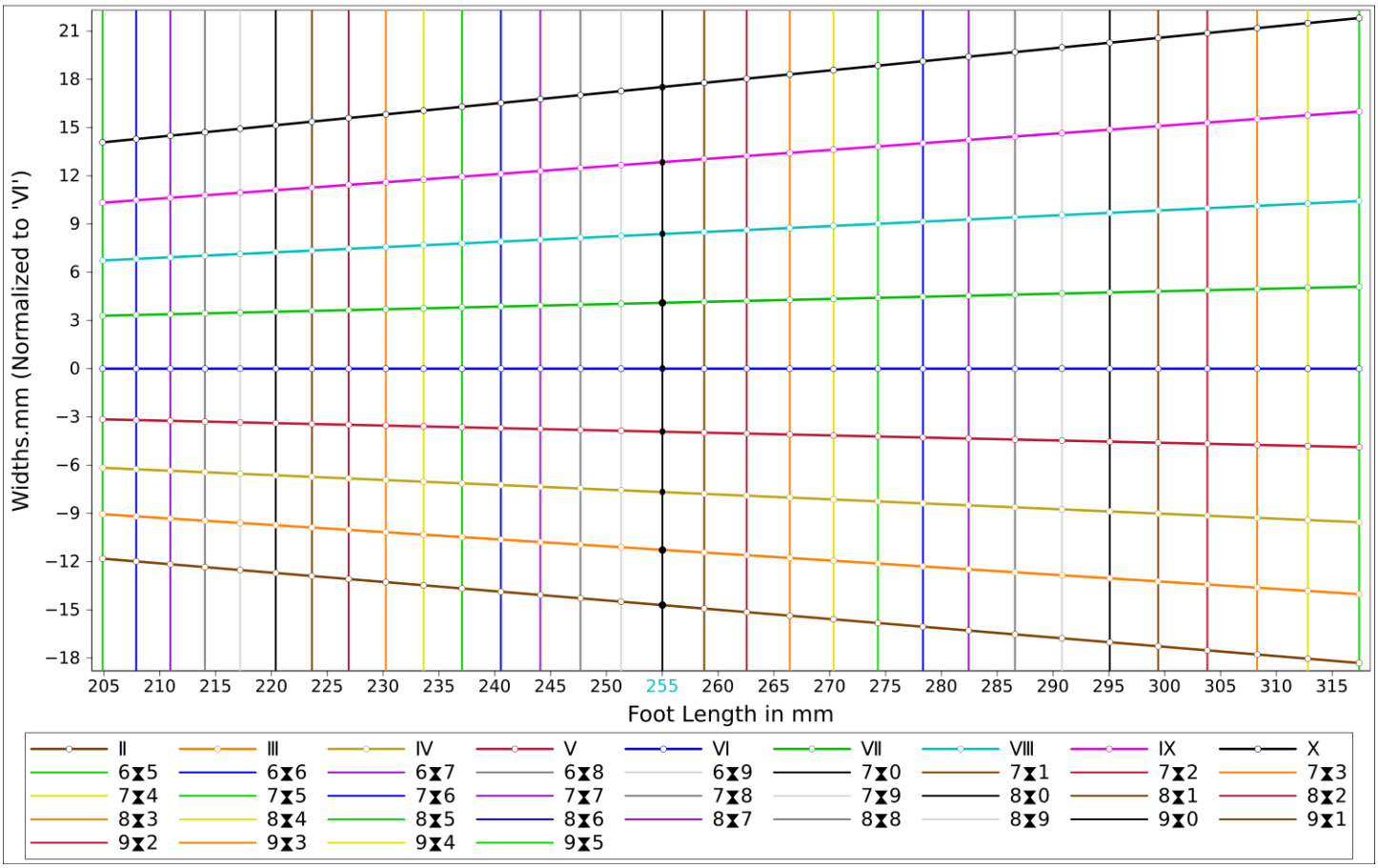
| UK | IT\|EU |
|---|---|
| 0.62 | 32.54 |
| 1.38 | 33.50 |
| 2.16 | 34.49 |
| 2.96 | 35.51 |
| 3.79 | 36.57 |
| 4.65 | 37.65 |
| 5.52 | 38.76 |
| 6.43 | 39.91 |
| 7.36 | 41.10 |
| 8.32 | 42.31 |
| 9.30 | 43.57 |
| 10.32 | 44.86 |
| 11.37 | 46.19 |
| 12.44 | 47.55 |
| 13.55 | 48.96 |
| 14.69 | 50.41 |




| eXp7 | IT\|EU | UK |
|---|---|---|
| 6x6 | 33.02 | 1.00 |
| 6x8 | 33.99 | 1.77 |
| 7x0 | 35 | 2.56 |
| 7x2 | 36.04 | 3.38 |
| 7x4 | 37.10 | 4.22 |
| 7x6 | 38.20 | 5.08 |
| 7x8 | 39.33 | 5.97 |
| 8x0 | 40½ (27 cm) | 6.89 |
| 8x2 | 41.70 | 7.83 |
| 8x4 | 42.93 | 8.81 |
| 8x6 | 44.21 | 9.81 |
| 8x8 | 45.52 | 10.84 |
| 9x0 | 46.86 | 11.90 |
| 9x2 | 48.25 | 12.99 |
| 9x4 | 49.68 | 14.12 |

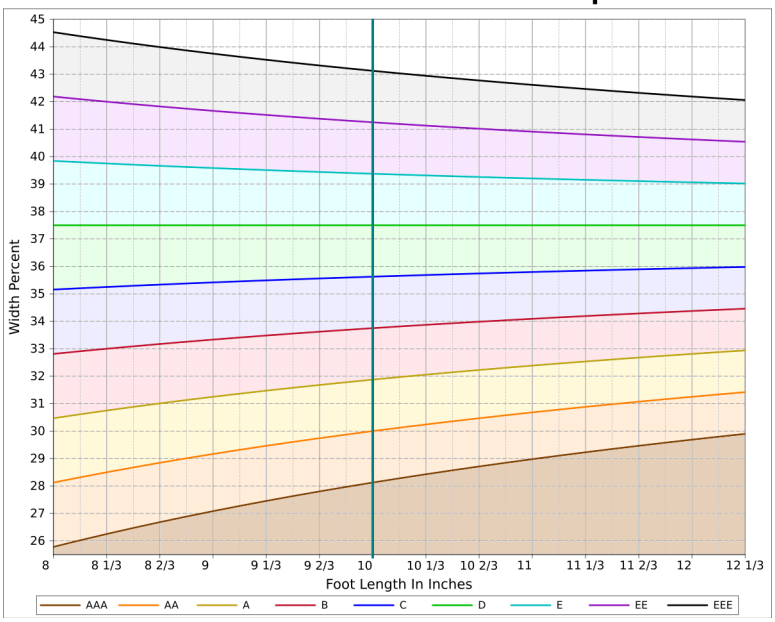
After printing check to see if the 325mm mark measures 325mm.

# eXp7 Length to Width Graph



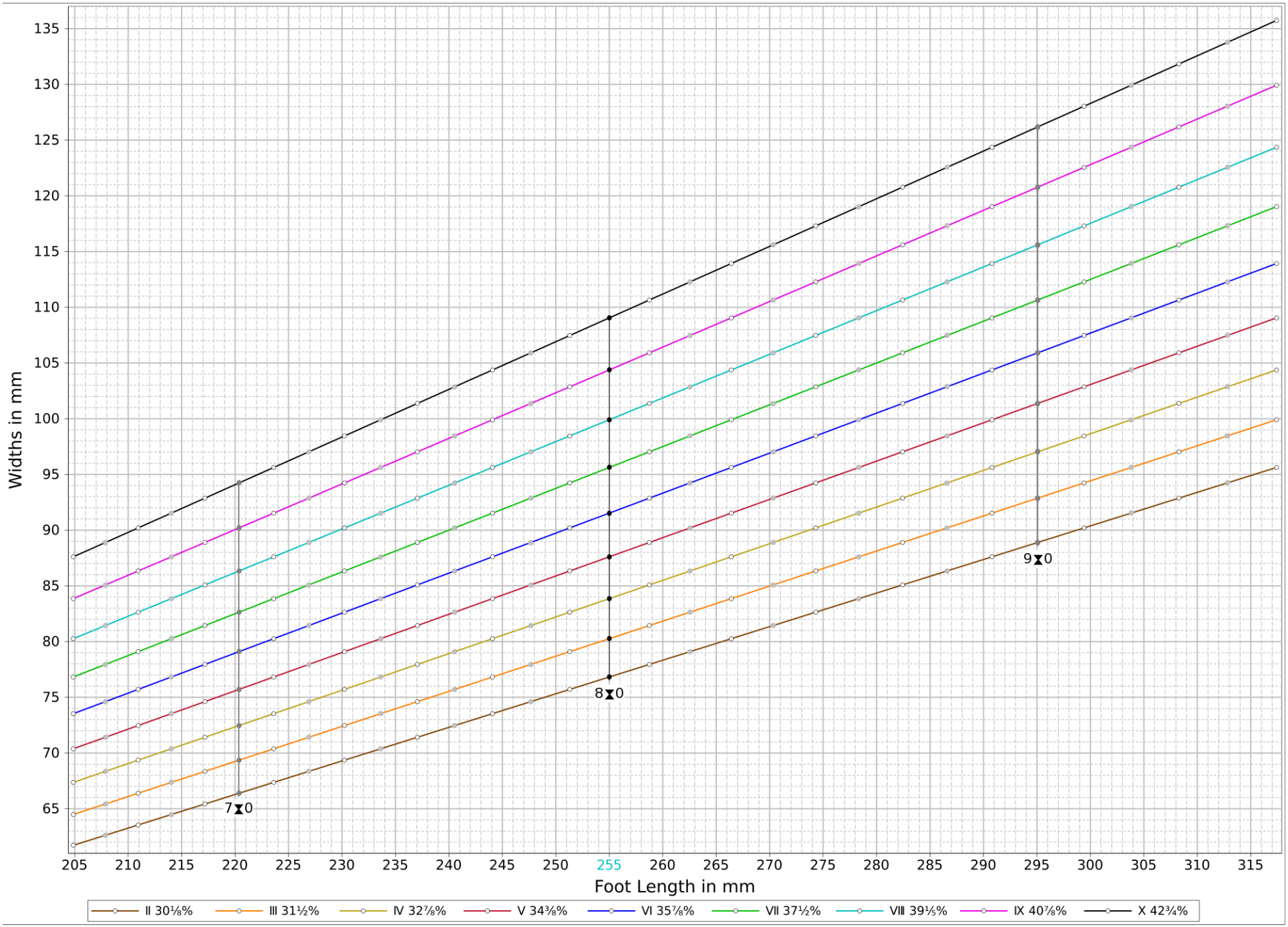

In the graph above are the plots of the Length & Width increments. The Length & Width are represented by the X & Y axes. The sizes are represented by the vertical lines and the widths are are represented by the slanted horizontal lines. The smallest size, **6⧗5**, is on the Left side and the largest size, **9⧗5**, is on the Right side. The narrowest width is on the bottom and the widest width is on the top. This illustrates the consistency of the Width:Length ratios for all sizes and width. To make the graph more illustrative the Width spacing has been normalized to the **VI (C)** width and all other widths plotted are the difference in reference to the **VI** Width. The squares (slightly rhombus-ed parallelograms) created maintain their aspect ratio through the size range. All the squares have the same aspect ratio for a given width spacing from the smallest to the largest sizes. For example the square bordered by the Width spacing of **II** & **III** and the size spacing of **6⧗5** & **6⧗6** has the same shape as the one bordered by sizes **9⧗4** & **9⧗5**, only enlarged. Likewise for Width spacing of **IX** & **X** for sizes **6⧗5** & **6⧗6** and **9⧗4** & **9⧗5** the same is also true. Also notice the width lines are straight given that the X & Y values are non-linear incremented but the ratio between the values are fixed producing the straight lines.

**US Brannock Width Variance Graph**




To the right is the U.S. Brannock Width Variance Graph. Using a linear length and width increment causes these width deviations across the size range. Because of the width spreading for the smallest sizes there is probably no need to have the narrower or wider width specifications while the width squeezing for the largest sizes may not provide the needed range.

# eXp7 Length to Width Plot



# eXp5™ MondoPoint 5mm Replacement

Mainly intended for work shoes/boots and athletic footware, applying the same increment method used for **eXp7** by incrementing the size by 5mm @ 255mm will produce **5** steps per inch between 9.7″ & 10.7″, ~10.2″ avg.

| eXp5 | Foot .mm | Foot .in | Last .cm | IT\|EU ×1½ | UK 25 | M 24 | US W 22½ |
|---|---|---|---|---|---|---|---|
| 7★0 | 209.6 | 8.25 | 22.36 | 33.53 | 1.41 | 2.41 | 3.91 |
| 7★1 | 213.7 | 8.42 | 22.80 | 34⅕ | 1.93 | 2.93 | 4.43 |
| 7★2 | 218.0 | 8.58 | 23.25 | 34.88 | 2.46 | 3.46 | 4.96 |
| 7★3 | 222.3 | 8.75 | 23.71 | 35.57 | 3 | 4 | 5½ |
| 7★4 | 226.7 | 8.92 | 24.18 | 36.27 | 3.56 | 4.56 | 6.06 |
| 7★5 | 231.2 | 9.10 | 24.66 | 37 | 4⅛ | 5⅛ | 6⅝ |
| 7★6 | 235.8 | 9.28 | 25.15 | 37.72 | 4.7 | 5.7 | 7⅕ |
| 7★7 | 240.4 | 9.47 | 25.65 | 38.47 | 5.3 | 6.3 | 7⅘ |
| 7★8 | 245.2 | 9.65 | 26.15 | 39.23 | 5.9 | 6.9 | 8⅖ |
| 7★9 | 250.0 | 9.84 | 26⅔ | 40 | 6½ | 7½ | 9 |
| 8★0 ▶ | 255.0 | 10.04 | 27⅕ | 40⅘ | 7⅛ | 8⅛ | 9⅝ |
| 8★1 | 260.0 | 10.24 | 27.74 | 41⅗ | 7¾ | 8¾ | 10¼ |
| 8★2 | 265.2 | 10.44 | 28.29 | 42.43 | 8⅖ | 9⅖ | 10.9 |
| 8★3 | 270.5 | 10.65 | 28.85 | 43.27 | 9.07 | 10.07 | 11.57 |
| 8★4 | 275.8 | 10.86 | 29.42 | 44⅛ | 9¾ | 10¾ | 12¼ |
| 8★5 | 281.3 | 11.07 | 30 | 45 | 10.44 | 11.44 | 12.94 |
| 8★6 | 286.8 | 11.29 | 30.60 | 45.89 | 11.14 | 12.14 | 13.64 |
| 8★7 | 292.5 | 11.52 | 31.20 | 46⅘ | 11.85 | 12.85 | 14.35 |
| 8★8 | 298.3 | 11.74 | 31.82 | 47¾ | 12.58 | 13.58 | 15.08 |
| 8★9 | 304.2 | 11.98 | 32.45 | 48.68 | 13.33 | 14.33 | 15.83 |
| 9★0 | 310.2 | 12.21 | 33.09 | 49.64 | 14.09 | 15.09 | 16.59 |

**F**oot **I**ncrement **F**actor = $\sqrt{26 \div 25}$ = 1.0198039

6⅔% Toe Room = $^{1}/_{0.9375}$ = $1.0\overline{6}$

A **6** step per inch increment (**eXp6™** ⬡, $\sqrt[6]{10½ \div 9½}$ ≈ 1.0168) can also be realized providing a ½ size Barleycorn increment @ 9⅖″, ~5**UK**. Size 8⬡0 is the origin for a 10″ **Foot**. One in between **eXp5** & **eXp7** that would be a good replacement for the Barleycorn system. **eXp7** is best suited to replace the Paris Point system.

# Widths

| | AAA | AA | A | B | C | D | E | EE | EEE |
|---|---|---|---|---|---|---|---|---|---|
| % | 27.94 | 29.64 | 31.43 | 33.34 | 35.36 | 37.50 | 39.77 | 42.18 | 44.74 |
| 7★0 | 58.6 | 62.1 | 65.9 | 69.9 | 74.1 | 78.6 | 83.4 | 88.4 | 93.8 |
| 7★1 | 59.7 | 63.4 | 67.2 | 71.3 | 75.6 | 80.2 | 85.0 | 90.2 | 95.6 |
| 7★2 | 60.9 | 64.6 | 68.5 | 72.7 | 77.1 | 81.7 | 86.7 | 92.0 | 97.5 |
| 7★3 | 62.1 | 65.9 | 69.9 | 74.1 | 78.6 | 83.4 | 88.4 | 93.8 | 99.5 |
| 7★4 | 63.4 | 67.2 | 71.3 | 75.6 | 80.2 | 85.0 | 90.2 | 95.6 | 101.4 |
| 7★5 | 64.6 | 68.5 | 72.7 | 77.1 | 81.7 | 86.7 | 92.0 | 97.5 | 103.4 |
| 7★6 | 65.9 | 69.9 | 74.1 | 78.6 | 83.4 | 88.4 | 93.8 | 99.5 | 105.5 |
| 7★7 | 67.2 | 71.3 | 75.6 | 80.2 | 85.0 | 90.2 | 95.6 | 101.4 | 107.6 |
| 7★8 | 68.5 | 72.7 | 77.1 | 81.7 | 86.7 | 92.0 | 97.5 | 103.4 | 109.7 |
| 7★9 | 69.9 | 74.1 | 78.6 | 83.4 | 88.4 | 93.8 | 99.5 | 105.5 | 111.9 |
| 8★0 | 71.3 | 75.6 | 80.2 | 85.0 | 90.2 | 95.6 | 101.4 | 107.6 | 114.1 |
| 8★1 | 72.7 | 77.2 | 81.7 | 86.7 | 92.0 | 97.5 | 103.4 | 109.7 | 116.3 |
| 8★2 | 74.1 | 78.6 | 83.4 | 88.4 | 93.8 | 99.5 | 105.5 | 111.9 | 118.7 |
| 8★3 | 75.6 | 80.2 | 85.0 | 90.2 | 95.6 | 101.4 | 107.6 | 114.1 | 121.0 |
| 8★4 | 77.1 | 81.7 | 86.7 | 92.0 | 97.5 | 103.4 | 109.7 | 116.3 | 123.4 |
| 8★5 | 78.6 | 83.4 | 88.4 | 93.8 | 99.5 | 105.5 | 111.9 | 118.7 | 125.8 |
| 8★6 | 80.2 | 85.0 | 90.2 | 95.6 | 101.4 | 107.6 | 114.1 | 121.0 | 128.3 |
| 8★7 | 81.7 | 86.7 | 92.0 | 97.5 | 103.4 | 109.7 | 116.3 | 123.4 | 130.9 |
| 8★8 | 83.4 | 88.4 | 93.8 | 99.5 | 105.5 | 111.9 | 118.7 | 125.8 | 133.5 |
| 8★9 | 85.0 | 90.2 | 95.6 | 101.4 | 107.6 | 114.1 | 121.0 | 128.3 | 136.1 |
| 9★0 | 86.7 | 92.0 | 97.5 | 103.4 | 109.7 | 116.3 | 123.4 | 130.9 | 138.8 |

**W**idth **I**ncrement **F**actor = (**F**oot **I**ncrement **F**actor)$^3$ = 1.0605960588273

# Girths

| | AAA | AA | A | B | C | D | E | EE | EEE |
|---|---|---|---|---|---|---|---|---|---|
| Non-WB% | 67.06 | 71.13 | 75.44 | 80.01 | 84.86 | 90.00 | 95.45 | 101.24 | 107.37 |
| WB% | 69.30 | 73.50 | 77.95 | 82.68 | 87.69 | 93.00 | 98.64 | 104.61 | 110.95 |
| 7★0 | 140.6 | 149.1 | 158.1 | 167.7 | 177.9 | 188.6 | 200.1 | 212.2 | 225.0 |
| 7★1 | 143.3 | 152.0 | 161.2 | 171.0 | 181.4 | 192.4 | 204.0 | 216.4 | 229.5 |
| 7★2 | 146.2 | 155.0 | 164.4 | 174.4 | 185.0 | 196.2 | 208.1 | 220.7 | 234.0 |
| 7★3 | 149.1 | 158.1 | 167.7 | 177.9 | 188.6 | 200.1 | 212.2 | 225.0 | 238.7 |
| 7★4 | 152.0 | 161.2 | 171.0 | 181.4 | 192.4 | 204.0 | 216.4 | 229.5 | 243.4 |
| 7★5 | 155.0 | 164.4 | 174.4 | 185.0 | 196.2 | 208.1 | 220.7 | 234.0 | 248.2 |
| 7★6 | 158.1 | 167.7 | 177.9 | 188.6 | 200.1 | 212.2 | 225.0 | 238.7 | 253.1 |
| 7★7 | 161.2 | 171.0 | 181.4 | 192.4 | 204.0 | 216.4 | 229.5 | 243.4 | 258.2 |
| 7★8 | 164.4 | 174.4 | 185.0 | 196.2 | 208.1 | 220.7 | 234.0 | 248.2 | 263.3 |
| 7★9 | 167.7 | 177.9 | 188.6 | 200.1 | 212.2 | 225.0 | 238.7 | 253.1 | 268.5 |
| 8★0 | 171.0 | 181.4 | 192.4 | 204.0 | 216.4 | 229.5 | 243.4 | 258.2 | 273.8 |
| 8★1 | 174.4 | 185.0 | 196.2 | 208.1 | 220.7 | 234.0 | 248.2 | 263.3 | 279.2 |
| 8★2 | 177.9 | 188.6 | 200.1 | 212.2 | 225.0 | 238.7 | 253.1 | 268.5 | 284.8 |
| 8★3 | 181.4 | 192.4 | 204.0 | 216.4 | 229.5 | 243.4 | 258.2 | 273.8 | 290.4 |
| 8★4 | 185.0 | 196.2 | 208.1 | 220.7 | 234.0 | 248.2 | 263.3 | 279.2 | 296.1 |
| 8★5 | 188.6 | 200.1 | 212.2 | 225.0 | 238.7 | 253.1 | 268.5 | 284.8 | 302.0 |
| 8★6 | 192.4 | 204.0 | 216.4 | 229.5 | 243.4 | 258.2 | 273.8 | 290.4 | 308.0 |
| 8★7 | 196.2 | 208.1 | 220.7 | 234.0 | 248.2 | 263.3 | 279.2 | 296.1 | 314.1 |
| 8★8 | 200.1 | 212.2 | 225.0 | 238.7 | 253.1 | 268.5 | 284.8 | 302.0 | 320.3 |
| 8★9 | 204.0 | 216.4 | 229.5 | 243.4 | 258.2 | 273.8 | 290.4 | 308.0 | 326.7 |
| 9★0 | 208.1 | 220.7 | 234.0 | 248.2 | 263.3 | 279.2 | 296.1 | 314.1 | 333.1 |

Girth = 2⅖ × Width ,  Non-Weight Bearing (Non-WB%)
Weight Bearing (WB%) Compensation = +3⅓% (1.0$\overline{3}$)