



Linear Belt Specifications

| | | | XL | L | H | XH | T5 | AT5 | ATL5 | T10 | AT10 | ATL10 | T20 | AT20 | ATL20 | HTD5 | HTD8 | HTDL8 | HTD14 | HTDL14 | STD5 | STD8 | |
|--|------------------|------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|---------------|--------------|--------------|--------|
| Pitch (Imperial and Metric) | | | .200" | .375" | .500" | .875" | 5 mm | 5 mm | 5 mm | 10 mm | 10 mm | 10 mm | 20 mm | 20 mm | 20 mm | 5 mm | 8 mm | 8 mm | 14 mm | 14 mm | 5 mm | 8 mm | |
| Ultimate Tensile Strength per Inch or 25 mm Belt Width | Steel | lbf/in | 759 | 1474 | 1605 | 3204 | 759 | 1602 | 2369 | 1605 | 3204 | 5445 | 3204 | 5445 | 7913 | 2369 | 3204 | 5445 | 4667 | 7848 | 2369 | 3204 | |
| | | N/25 mm | 3375 | 6555 | 7140 | 14250 | 3375 | 7125 | 10540 | 1605 | 7140 | 14250 | 24220 | 14250 | 24220 | 35200 | 10540 | 14250 | 24220 | 20760 | 34909 | 10540 | 14250 |
| | Kevlar | lbf/in | 1882 | 1727 | 1818 | 3639 | 1200 | 1877 | N/A | 1818 | 3639 | N/A | 3639 | 4900 | N/A | 1818 | 3639 | 4900 | 4200 | N/A | 1818 | 3639 | |
| | | N/25 mm | 8370 | 7682 | 8085 | 16185 | 5332 | 8350 | N/A | 8085 | 16185 | N/A | 16185 | 21798 | N/A | 8085 | 16185 | 21798 | 18684 | N/A | 8085 | 16185 | |
| Max. Allowable Belt Tension per Inch or 25 mm Belt Width | Steel | lbf/in | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2403 | N/A | 2403 | N/A | N/A | N/A | 2403 | N/A | N/A | N/A | N/A | N/A | |
| | | N/25 mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 10687 | N/A | 10687 | N/A | N/A | N/A | 10687 | N/A | N/A | N/A | N/A | N/A | |
| | High Flex | lbf/in | N/A | N/A | 2369 | N/A | N/A | N/A | N/A | 2369 | N/A | 6059 | N/A | N/A | N/A | N/A | 2917 | 6059 | 5193 | N/A | N/A | N/A | |
| | | N/25 mm | N/A | N/A | 10540 | N/A | N/A | N/A | N/A | 10540 | N/A | 26950 | N/A | N/A | N/A | N/A | 12975 | 26950 | 23100 | N/A | N/A | N/A | |
| Allowable Effective Tension for Belt Teeth (15 and more teeth in mesh) | Steel | lbf/in | 192 | 371 | 436 | 854 | 189 | 396 | 526 | 429 | 841 | 1317 | 841 | 1317 | 1732 | 526 | 841 | 1317 | 1159 | 1718 | 526 | 841 | |
| | | N/25 mm | 853 | 1652 | 1939 | 3801 | 840 | 1761 | 2340 | 1909 | 3741 | 5860 | 3741 | 5860 | 7705 | 2340 | 3741 | 5860 | 5156 | 7641 | 2340 | 3741 | |
| | Welded | lbf/in | 96 | 186 | 218 | 427 | 94 | 198 | 198 | 214 | 421 | 421 | 421 | 659 | N/A | 263 | 421 | N/A | 580 | N/A | 263 | 421 | |
| | | N/25 mm | 427 | 826 | 970 | 1900 | 420 | 880 | 880 | 954 | 1870 | 1870 | 1870 | 2930 | N/A | 1170 | 1870 | N/A | 2578 | N/A | 1170 | 1870 | |
| | Kevlar | lbf/in | 209 | 276 | 243 | 400 | 180 | 272 | N/A | 239 | 393 | N/A | 393 | 393 | N/A | 239 | 393 | 393 | 341 | N/A | 239 | 393 | |
| | | N/25 mm | 930 | 1229 | 1081 | 1778 | 801 | 1210 | N/A | 1064 | 1750 | N/A | 1750 | 1750 | N/A | 1063 | 1750 | 1750 | 1515 | N/A | 1063 | 1750 | |
| | Welded | lbf/in | 157 | 207 | 182 | 300 | 140 | 204 | N/A | 179 | 295 | N/A | 295 | 295 | N/A | 179 | 295 | N/A | 255 | N/A | 179 | 295 | |
| | | N/25 mm | 698 | 922 | 810 | 1334 | 687 | 908 | N/A | 798 | 1312 | N/A | 1312 | 1312 | N/A | 797 | 1312 | N/A | 1136 | N/A | 797 | 1312 | |
| | Stainless Steel | lbf/in | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 631 | N/A | 631 | N/A | N/A | N/A | 631 | N/A | N/A | N/A | N/A | N/A | N/A |
| | | N/25 mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2805 | N/A | 2805 | N/A | N/A | N/A | 2805 | N/A | N/A | N/A | N/A | N/A | N/A |
| | Welded | lbf/in | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 315 | N/A | 315 | N/A | N/A | N/A | 315 | N/A | N/A | N/A | N/A | N/A | N/A |
| | | N/25 mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1402 | N/A | 1402 | N/A | N/A | N/A | 1402 | N/A | N/A | N/A | N/A | N/A | N/A |
| High Flex | lbf/in | N/A | N/A | 534 | N/A | N/A | N/A | N/A | 526 | N/A | 11420 | N/A | N/A | N/A | N/A | 777 | 1142 | 1005 | N/A | N/A | N/A | 777 | |
| | N/25 mm | N/A | N/A | 2377 | N/A | N/A | N/A | N/A | 2340 | N/A | 5079 | N/A | N/A | N/A | N/A | 3456 | 5079 | 4470 | N/A | N/A | N/A | 3456 | |
| Welded | lbf/in | N/A | N/A | 267 | N/A | N/A | N/A | N/A | 263 | N/A | 421 | N/A | N/A | N/A | N/A | 388 | N/A | 502 | N/A | N/A | N/A | 164 | |
| | N/25 mm | N/A | N/A | 1189 | N/A | N/A | N/A | N/A | 1170 | N/A | 1871 | N/A | N/A | N/A | N/A | 1728 | N/A | 2235 | N/A | N/A | N/A | 728 | |
| Specific Belt Weight | Steel | lbf/ft/in | 0.036 | 0.059 | 0.066 | 0.18 | 0.037 | 0.055 | 0.062 | 0.074 | 0.096 | 0.114 | 0.125 | 0.169 | 0.185 | 0.07 | 0.101 | 0.135 | 0.182 | 0.21 | 0.067 | 0.087 | |
| | | kgf/m/cm | 0.021 | 0.035 | 0.039 | 0.105 | 0.022 | 0.032 | 0.036 | 0.043 | 0.056 | 0.067 | 0.073 | 0.099 | 0.108 | 0.041 | 0.059 | 0.079 | 0.107 | 0.123 | 0.039 | 0.051 | |
| Kevlar | lbf/ft/in | 0.033 | 0.052 | 0.055 | 0.155 | 0.033 | 0.046 | N/A | 0.062 | 0.071 | N/A | 0.101 | 0.124 | N/A | 0.05 | 0.08 | 0.077 | 0.143 | N/A | 0.05 | 0.074 | | |
| | kgf/m/cm | 0.019 | 0.03 | 0.032 | 0.091 | 0.02 | 0.027 | N/A | 0.036 | 0.042 | N/A | 0.059 | 0.073 | N/A | 0.029 | 0.045 | 0.045 | 0.084 | N/A | 0.029 | 0.043 | | |
| Stainless Steel | lbf/ft/in | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.096 | N/A | 0.125 | N/A | N/A | N/A | 0.101 | N/A | N/A | N/A | N/A | N/A | N/A | |
| | kgf/m/cm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.056 | N/A | 0.073 | N/A | N/A | N/A | 0.059 | N/A | N/A | N/A | N/A | N/A | N/A | |
| High Flex | lbf/ft/in | N/A | N/A | 0.072 | N/A | N/A | N/A | N/A | 0.079 | N/A | 0.118 | N/A | N/A | N/A | N/A | 0.113 | 0.141 | 0.191 | N/A | N/A | N/A | 0.956 | |
| | kgf/m/cm | N/A | N/A | 0.042 | N/A | N/A | N/A | N/A | 0.046 | N/A | 0.069 | N/A | N/A | N/A | N/A | 0.066 | 0.083 | 0.112 | N/A | N/A | N/A | 0.056 | |
| Specific Belt Stiffness (Open Ended) | Steel | lbf/in | 47950 | 92800 | 109000 | 213600 | 47950 | 100500 | 133600 | 109000 | 213600 | 334600 | 213600 | 334600 | 440000 | 133600 | 213600 | 334588 | 294400 | 440000 | 133600 | 213600 | |
| | | N/mm | 8400 | 16255 | 19085 | 37410 | 8400 | 17605 | 23400 | 19085 | 37410 | 58600 | 37410 | 58600 | 77050 | 23400 | 37410 | 58600 | 51560 | 77050 | 23400 | 37410 | |
| | Kevlar | lbf/in | 52250 | 69100 | 60700 | 100000 | 52250 | 69100 | N/A | 60700 | 100000 | N/A | 100000 | 100000 | N/A | 60700 | 100000 | 99920 | 86500 | N/A | 60700 | 100000 | |
| | | N/mm | 9155 | 12100 | 10635 | 17500 | 9155 | 12100 | N/A | 10635 | 17500 | N/A | 17500 | 17500 | N/A | 10635 | 17500 | 17500 | 15150 | N/A | 10635 | 17500 | |
| | Stainless Steel | lbf/in | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 160212 | N/A | 160212 | N/A | N/A | N/A | 160212 | N/A | N/A | N/A | N/A | N/A | N/A |
| | | N/mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 28057 | N/A | 28057 | N/A | N/A | N/A | 28057 | N/A | N/A | N/A | N/A | N/A | N/A |
| | High Flex | lbf/in | N/A | N/A | 133600 | N/A | N/A | N/A | N/A | 133600 | N/A | 290000 | N/A | N/A | N/A | N/A | 197327 | 289996 | 255199 | N/A | N/A | N/A | 197330 |
| | | N/mm | N/A | N/A | 23400 | N/A | N/A | N/A | N/A | 23400 | N/A | 50790 | N/A | N/A | N/A | N/A | 34560 | 50790 | 44695 | N/A | N/A | N/A | 34560 |
| Min. No. of Pulley Teeth | Steel and Kevlar | | 10 | 10 | 14 | 18 | 10 | 15 | 15 | 14 | 15 | 25 | 15 | 18 | 30 | 14 | 20 | 32 | 28 | 43 | 14 | 20 | |
| | Stainless Steel | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 20 | N/A | 20 | N/A | N/A | N/A | 25 | N/A | N/A | N/A | N/A | N/A | |
| | High Flex | | N/A | N/A | 12 | N/A | N/A | N/A | N/A | 12 | N/A | 20 | N/A | N/A | N/A | N/A | 16 | 25 | 23 | N/A | N/A | 16 | |
| Min. Pitch Diameter (Inch or mm) | Steel and Kevlar | inch or mm | .64" | 1.19" | 2.23" | 5.01" | 16 mm | 24 mm | 24 mm | 45 mm | 48 mm | 80 mm | 96 mm | 115 mm | 191 mm | 22 mm | 51 mm | 81 mm | 125 mm | 191 mm | 22 mm | 51 mm | |
| | Stainless Steel | mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 64 mm | N/A | 127 mm | N/A | N/A | N/A | 64 mm | N/A | N/A | N/A | N/A | N/A | |
| | High Flex | inch or mm | N/A | N/A | 1.91" | N/A | N/A | N/A | N/A | 38 mm | N/A | 64 mm | N/A | N/A | N/A | N/A | 41 mm | 64 mm | 102 mm | N/A | N/A | 41 mm | |
| Min. Diameter of Tensioning Idler Running on Back of Belt | Steel and Kevlar | in/mm | 1.125"/30 mm | 2.375"/60 mm | 3.125"/80 mm | 5.875"/150 mm | 1.125"/30 mm | 2.375"/60 mm | 2.375"/60 mm | 3.125"/80 mm | 4.75"/120 mm | 5.875"/150 mm | 4.75"/120 mm | 7.125"/180 mm | 9.875"/250 mm | 2.375"/60 mm | 4.75"/120 mm | 6.00"/150 mm | 7.875"/200 mm | 9.875"/250 mm | 2.375"/60 mm | 4.75"/120 mm | |
| | Stainless Steel | in/mm | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.25"/160 mm | N/A | 6.25"/160 mm | N/A | N/A | N/A | 6.00"/150 mm | N/A | N/A | N/A | N/A | N/A | |
| | High Flex | in/mm | N/A | N/A | 2.375"/60 mm | N/A | N/A | N/A | N/A | 2.375"/60 mm | N/A | 5.125"/130 mm | N/A | N/A | N/A | N/A | 4.00"/100 mm | 5.125"/130 mm | 6.25"/160 mm | N/A | N/A | 4.00"/100 mm | |
| Available in FDA Compliant Construction (85 Shore A Urethane) | | Yes | Yes | Yes | | Yes | | | Yes | | | | | | | | | | | | | | |
| Standard Colors (N=Natural, W=White) | | N | N | N,W | N | N,W | W | W | W | N,W | W | W | N,W | W | W | W | W | W | W | W | W | W | |

Calculating Belt Weight

Imperial Units

Belt Weight = (Specific Belt Wt, lbf/ft/in) x (Belt Length, ft) x (Belt Width, in)

e.g. 200 ft of H600, Steel Cord

Belt Weight = 79 lbs = (0.066 lbf/ft/in) x (200 ft) x (6 in)

Metric Units

Belt Weight = (Specific Belt Wt, kgf/m/cm) x (Belt Length, m) x (Belt Width, cm)

e.g. 100 meters of 150T10, Steel Cord

Belt Weight = 111 kg = (0.074kgf/m/cm) x (100 m) x (15 cm)

Service Temperature Range

-5° C to 70° C (23° F to 158° F)

Hardness

92 Shore A - Standard PU, 85 Shore A - FDA Compliant PU

Coefficient of Friction

Urethane vs. UHMWPE (dry)

Urethane vs. Steel (dry) 0.5 to 0.7

Urethane vs. Aluminum (dry) 0.5 to 0.6

Urethane vs. UHMWPE (dry) 0.2 to 0.4

Nylon vs. Steel (dry) 0.2 to 0.4

Nylon vs. UHMWPE (dry) 0.1 to 0.3

- Most belts are available with Nylon Fabric on either or both sides.

- For Nylon on the tooth side, specify "NT"

- For Nylon on the back side, specify "NB"

- For Nylon on both sides, specify "NTB"

Note: Nylon on tooth side is NOT available on HTD5 Steel or Kevlar in widths greater than 50 mm.

- Belting produced to specific length tolerance is available upon request.

- Many linear positioning applications require belts of a specific length tolerance, or a "minus pitch tolerance." Gates Mectrol can produce belts to specific minus tolerances. Consult a Gates Mectrol Applications Engineer to determine the proper length tolerance calculation.