## FLAT WASHERS



| Nominal Diameter |  |  | ID |  |  | $\frac{\text { OD }}{\text { Outside Diameter }}$ |  |  | Thickness |  |  | Approx. No./Pcs. Per Lb. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Inside Diameter |  |  |  |  |  | Thickness |  |  |  |
|  |  |  | Basic | Tolerance |  | Basic | Tolerance |  | Basic | Max | Min |  |
| Fractional | Decimal |  |  | Plus | Minus |  | Plus | Minus |  |  |  |  |
| - | - |  | 0.078 | 0.000 | 0.005 | 0.188 | 0.000 | 0.005 | 0.020 | 0.025 | 0.016 |  |
| - | - |  | 0.094 | 0.000 | 0.005 | 0.250 | 0.000 | 0.005 | 0.020 | 0.025 | 0.016 |  |
| \# 4 | 0.112 |  | 0.125 | 0.008 | 0.005 | 0.312 | 0.008 | 0.005 | 0.032 | 0.040 | 0.025 | 1650 |
| \# 6 | 0.138 |  | 0.156 | 0.008 | 0.005 | 0.375 | 0.015 | 0.005 | 0.049 | 0.065 | 0.036 | 790 |
| \# 8 | 0.164 |  | 0.188 | 0.008 | 0.005 | 0.438 | 0.015 | 0.005 | 0.049 | 0.065 | 0.036 | 585 |
| \#10 | 0.190 |  | 0.219 | 0.008 | 0.005 | 0.500 | 0.015 | 0.005 | 0.049 | 0.065 | 0.036 | 435 |
| 3/16 | 0.188 |  | 0.250 | 0.015 | 0.005 | 0.562 | 0.015 | 0.005 | 0.049 | 0.065 | 0.036 | 361 |
| \#12 | 0.216 |  | 0.250 | 0.015 | 0.005 | 0.562 | 0.015 | 0.005 | 0.065 | 0.080 | 0.051 | 280 |
| 1/4 | 0.250 | N | 0.281 | 0.015 | 0.005 | 0.625 | 0.015 | 0.005 | 0.065 | 0.080 | 0.051 | 222 |
| 1/4 | 0.250 | W | 0.312 | 0.015 | 0.005 | 0.734 | 0.015 | 0.007 | 0.065 | 0.080 | 0.051 | 149 |
| 5/16 | 0.312 | N | 0.344 | 0.015 | 0.005 | 0.688 | 0.015 | 0.007 | 0.065 | 0.080 | 0.051 | 192 |
| 5/16 | 0.312 | W | 0.375 | 0.015 | 0.005 | 0.875 | 0.030 | 0.007 | 0.083 | 0.104 | 0.064 | 87 |
| 3/8 | 0.375 | N | 0.406 | 0.015 | 0.005 | 0.812 | 0.015 | 0.007 | 0.065 | 0.080 | 0.051 | 140 |
| 3/8 | 0.375 | W | 0.438 | 0.015 | 0.005 | 1.000 | 0.030 | 0.007 | 0.083 | 0.104 | 0.064 | 67 |
| 7/16 | 0.438 | N | 0.469 | 0.015 | 0.005 | 0.922 | 0.015 | 0.007 | 0.065 | 0.080 | 0.051 | 105 |
| 7/16 | 0.438 | W | 0.500 | 0.015 | 0.005 | 1.250 | 0.030 | 0.007 | 0.083 | 0.104 | 0.064 | 41 |
| 1/2 | 0.500 | N | 0.531 | 0.015 | 0.005 | 1.062 | 0.030 | 0.007 | 0.095 | 0.121 | 0.074 | 55 |
| 1/2 | 0.500 | W | 0.562 | 0.015 | 0.005 | 1.375 | 0.030 | 0.007 | 0.109 | 0.132 | 0.086 | 26 |
| 9/16 | 0.562 | N | 0.594 | 0.015 | 0.005 | 1.156 | 0.030 | 0.007 | 0.095 | 0.121 | 0.074 | 43 |
| 9/16 | 0.562 | W | 0.625 | 0.015 | 0.005 | 1.469 | 0.030 | 0.007 | 0.109 | 0.132 | 0.086 | 22 |

Note: $\mathbf{N}=$ SAE Pattern, $\mathrm{W}=$ USS Pattern
(NARROW)
(WIDE)

## FLAT WASHERS



| Nominal Diameter |  |  | ID |  |  | OD |  |  | T |  |  | Approx. <br> No./Pcs. <br> Per Lb. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Inside Diameter |  |  | Outside Diameter |  |  | Thickness |  |  |  |
|  |  |  | Basic | Tolerance |  | Basic | Tolerance |  | Basic | Max | Min |  |
| Fractional | Decimal |  |  | Plus | Minus |  | Plus | Minus |  |  |  |  |
| 5/8 | 0.625 | N | 0.656 | 0.030 | 0.007 | 1.312 | 0.030 | 0.007 | 0.095 | 0.121 | 0.074 | 13 |
| 5/8 | 0.625 | W | 0.688 | 0.030 | 0.007 | 1.750 | 0.030 | 0.007 | 0.134 | 0.160 | 0.108 | 21 |
| 3/4 | 0.750 | N | 0.812 | 0.030 | 0.007 | 1.469 | 0.030 | 0.007 | 0.134 | 0.160 | 0.108 | 9.1 |
| 3/4 | 0.750 | W | 0.812 | 0.030 | 0.007 | 2.000 | 0.030 | 0.007 | 0.148 | 0.177 | 0.122 | 16 |
| 7/8 | 0.875 | N | 0.938 | 0.030 | 0.007 | 1.750 | 0.030 | 0.007 | 0.134 | 0.160 | 0.108 | 6.5 |
| 7/8 | 0.875 | W | 0.938 | 0.030 | 0.007 | 2.250 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 12 |
| 1 | 1.000 | N | 1.062 | 0.030 | 0.007 | 2.000 | 0.030 | 0.007 | 0.134 | 0.160 | 0.108 | 5.3 |
| 1 | 1.000 | W | 1.062 | 0.030 | 0.007 | 2.500 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 92 |
| 1-1/8 | 1.125 | N | 1.250 | 0.030 | 0.007 | 2.250 | 0.030 | 0.007 | 0.134 | 0.160 | 0.108 | 4.5 |
| 1-1/8 | 1.125 | W | 1.250 | 0.030 | 0.007 | 2.750 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 6.25 |
| 1-1/4 | 1.250 | N | 1.375 | 0.030 | 0.007 | 2.500 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 3.8 |
| 1-1/4 | 1.250 | W | 1.375 | 0.030 | 0.007 | 3.000 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 525 |
| 1-3/8 | 1.375 | N | 1.500 | 0.030 | 0.007 | 2.750 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 3 |
| 1-3/8 | 1.375 | W | 1.500 | 0.045 | 0.010 | 3.250 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 4.25 |
| 1-1/2 | 1.500 | N | 1.625 | 0.030 | 0.007 | 3.000 | 0.030 | 0.007 | 0.165 | 0.192 | 0.136 | 2.6 |
| 1-1/2 | 1.500 | W | 1.625 | 0.045 | 0.010 | 3.500 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 23 |
| 1-5/8 | 1.625 |  | 1.750 | 0.045 | 0.010 | 3.750 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 2 |
| 1-3/4 | 1.750 |  | 1.875 | 0.045 | 0.010 | 4.000 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 1.8 |
| 1-7/8 | 1.875 |  | 2.000 | 0.045 | 0.010 | 4.250 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 1.6 |
| 2 | 2.000 |  | 2.125 | 0.045 | 0.010 | 4.500 | 0.045 | 0.010 | 0.180 | 0.213 | 0.153 | 12 |
| 2-1/4 | 2.250 |  | 2.375 | 0.045 | 0.010 | 4.750 | 0.045 | 0.010 | 0.220 | 0.248 | 0.193 | 1 |
| 2-1/2 | 2.500 |  | 2.625 | 0.045 | 0.010 | 5.000 | 0.045 | 0.010 | 0.238 | 0.280 | 0.210 | . 9 |
| 2-3/4 | 2.750 |  | 2.875 | 0.065 | 0.010 | 5.250 | 0.065 | 0.010 | 0.259 | 0.310 | 0.228 | . 8 |
| 3 | 3.000 |  | 3.125 | 0.065 | 0.010 | 5.500 | 0.065 | 0.010 | 0.284 | 0.327 | 0.249 |  |

Note: N = SAE Pattern, W = USS Pattern (NARROW) (WIDE)

## MEDIUM SPRING (REGULAR) <br> LOCK WASHERS




# COUNTERSUNK FINISHING WASHERS 



| Screw <br> Size | OD | ID |  |
| :---: | :---: | :---: | :---: |
|  |  | Max. |  |
| 6 | .469 | .170 | .200 |
| 8 | .531 | .180 | .210 |
| 10 | .593 | .235 | , 265 |
| 12 | .656 | .259 | .289 |
| $1 / 4$ | .781 | .305 | .335 |

## HI-COLLAR HELICAL SPRING LOCK WASHERS



| Nominal Washer Size |  | A |  | B | W | $\frac{T+t}{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Inside Diameter |  | Outside Diameter | Washer Section |  |
|  |  | Width | Thickness |  |
|  |  | Min. | Max. | Max. | Min. | Min. |
| 4 | 0.112 |  |  | 0.115 | 0.121 | 0.173 | 0.022 | 0.022 |
| 6 | 0.138 | 0.141 | 0.148 | 0.216 | 0.030 | 0.030 |
| 8 | 0.164 | 0.168 | 0.175 | 0.267 | 0.042 | 0.047 |
| 10 | 0.190 | 0.194 | 0.202 | 0.294 | 0.042 | 0.047 |
| 1/4 | 0.250 | 0.255 | 0.263 | 0.365 | 0.047 | 0.078 |
| 5/16 | 0.312 | 0.318 | 0.238 | 0.460 | 0.062 | 0.093 |
| 3/8 | 0.375 | 0.382 | 0.393 | 0.533 | 0.076 | 0.125 |

## TOOTH LOCK WASHERS

## Internal Tooth



## External Tooth



## Internal - External Tooth

| Nominal <br> Washer Size | A <br> Inside Diameter |  | B <br> Outside Diameter |  | C <br> Thickness |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Min. | Max. | Max. | Min. | Max. | Min. |
| 6 | 0.138 | 0.141 | 0.150 | 0.510 | 0.495 | 0.028 |
| 8 | 0.164 | 0.168 | 0.176 | 0.510 | 0.495 | 0.028 |
| 10 | 0.190 | 0.195 | 0.204 | 0.610 | 0.580 | 0.034 |
| $1 / 4$ | 0.250 | 0.256 | 0.267 | 0.760 | 0.725 | 0.040 |



