

TOLERANCES			
HR CARBON AND ALLOY BARS			
Rounds and Squares			
Specified Size	Variation from Size in Inches		Out of Round* or Square in Inches
Inches	Over	Under	
Up to 1/8, incl.	.005	.005	.008
Over 1/8 to 1/4, incl.	.006	.006	.009
Over 1/4 to 3/8, incl.	.007	.007	.010
Over 3/8 to 1/2, incl.	.008	.008	.012
Over 1/2 to 3/4, incl.	.008	.008	.013
Over 3/4 to 1, incl.	.010	.010	.015
Over 1 to 1 1/4, incl.	.011	.011	.016
Over 1 1/4 to 1 1/2, incl.	.012	.012	.018
Over 1 1/2 to 1 3/4, incl.	.014	.014	.021
Over 1 3/4 to 2, incl.	3/4	3/4	.023
Over 2 to 2 1/4, incl.	1/2	0	.023
Over 2 1/4 to 2 1/2, incl.	3/4	0	.035
Over 2 1/2 to 4 1/2, incl.	3/4	0	.048
Over 4 1/2 to 5 1/2, incl.	3/4	0	.058
Over 5 1/2 to 6 1/2, incl.	1	0	.070
Over 6 1/2 to 8 1/4, incl.	3/2	0	.085
Over 8 1/4 to 9 1/2, incl.	3/2	0	.100
Over 9 1/2 to 10, incl.	1	0	.120

*Out-of-round is the difference between the maximum and minimum diameters of a round bar measured at the same cross section. Out-of-square is the difference in the two dimensions at the same cross section of a square bar—each dimension being the distance between opposite faces.

HEXAGONS AND OCTAGONS			
Permissible Variations from Specified Size, in.			Out-of-Hexagon (Carbon Steel and Alloy Steel) or Out-of-Octagon (Alloy Steel), in.*
Specified Sizes Between Opposite Sides, in.	Over	Under	
To 3/8, incl.	.007	.007	.009
Over 3/8 to 1, incl.	.010	.010	.015
Over 1 to 1 1/2, incl.	.021	.013	.025
Over 1 1/2 to 2, incl.	1/2	3/4	3/4
Over 2 to 2 1/2, incl.	3/4	3/4	3/4
Over 2 1/2 to 3 1/2, incl.	3/4	3/4	3/4
Over 3 1/2 to 4 1/2, incl.	3/4	3/4	3/4

*Out-of-hexagon or out-of-octagon is the greatest difference between any two dimensions at the same cross section between opposite faces.

SQUARE EDGE AND ROUND EDGE FLATS									
Tolerances apply to thickness in inches									
Specified width in Inches	.023 - .230	Variations from Thickness in Inches (Tolerances are over or under)						Variations from width in Inches	
		Under	Over	Over	Over	Over	Over	Over	Under
Up to 1									
Over 1 - 2	.007	.007	.008	.010	—	—	—	3/4	3/4
Over 2 - 4	.008	.008	.015	.020	3/4	3/4	3/4	3/4	3/4
Over 4 - 6	.009	.009	.015	.020	3/4	3/4	3/4	3/4	3/4
Over 6 - 8	—	.015	.016	.025	3/4	3/4	**	3/4	3/4**

* Not produced as bar flats.
** Thickness and width tolerances for flats over 6" to 8", incl., in width and over 3" in thickness should be established in each instance.

Standard Straightness — $1/16"$ in any 5 feet, or $1/8"$ × number of feet of length divided by 5.
Special Straightness — $1/16"$ in any 5 feet, or $1/8"$ × number of feet of length divided by 5.
NOTE — Straightness tolerances do not apply to hot rolled alloy steel bars if any subsequent heating operation has been performed.

TOLERANCES				
CF CARBON BARS				
Cold Drawn or Turned & Polished				
Undersize Variations in Inches				
Size Range in Inches	Max. Carbon Range Over .28% or less	Max. Carbon Range Over .28% or less	Max. Carbon Range to .55% incl. Stress Relieved or Annealed After Cold Finishing	Max. Carbon Range Over .55% or all Grades Quenched & Tempered or Normalized and Tempered Before Cold Finishing
1/8 or under	.002	.003	.004	.005
Over 1/8 to 1/4, incl.	.003	.004	.005	.006
Over 1/4 to 1/2, incl.	.004	.005	.006	.007
Over 1/2 to 3/4, incl.	.005	.006	.007	.008
Over 3/4 to 1, incl.	.006	.007	.008	.009
Over 1 to 2, incl.	.007	.008	.009	.010
Over 2 to 4, incl.	.008	.009	.010	.011
Over 4 to 6, incl.	.009	.010	.011	.012
Over 6 to 8, incl.	.010	.011	.012	.013
Over 8 to 10, incl.	.011	.012	.013	.014
Over 10 to 12, incl.	.012	.013	.014	.015
Over 12 to 14, incl.	.013	.014	.015	.016
Over 14 to 16, incl.	.014	.015	.016	.017
Over 16 to 18, incl.	.015	.016	.017	.018
Over 18 to 20, incl.	.016	.017	.018	.019
Over 20 to 24, incl.	.017	.018	.019	.020
Over 24 to 28, incl.	.018	.019	.020	.021
Over 28 to 32, incl.	.019	.020	.021	.022
Over 32 to 36, incl.	.020	.021	.022	.023
Over 36 to 40, incl.	.021	.022	.023	.024
Over 40 to 44, incl.	.022	.023	.024	.025
Over 44 to 48, incl.	.023	.024	.025	.026
Over 48 to 52, incl.	.024	.025	.026	.027
Over 52 to 56, incl.	.025	.026	.027	.028
Over 56 to 60, incl.	.026	.027	.028	.029
Over 60 to 64, incl.	.027	.028	.029	.030
Over 64 to 68, incl.	.028	.029	.030	.031
Over 68 to 72, incl.	.029	.030	.031	.032
Over 72 to 76, incl.	.030	.031	.032	.033
Over 76 to 80, incl.	.031	.032	.033	.034
Over 80 to 84, incl.	.032	.033	.034	.035
Over 84 to 88, incl.	.033	.034	.035	.036
Over 88 to 92, incl.	.034	.035	.036	.037
Over 92 to 96, incl.	.035	.036	.037	.038
Over 96 to 100, incl.	.036	.037	.038	.039
Over 100 to 104, incl.	.037	.038	.039	.040
Over 104 to 108, incl.	.038	.039	.040	.041
Over 108 to 112, incl.	.039	.040	.041	.042
Over 112 to 116, incl.	.040	.041	.042	.043
Over 116 to 120, incl.	.041	.042	.043	.044
Over 120 to 124, incl.	.042	.043	.044	.045
Over 124 to 128, incl.	.043	.044	.045	.046
Over 128 to 132, incl.	.044	.045	.046	.047
Over 132 to 136, incl.	.045	.046	.047	.048
Over 136 to 140, incl.	.046	.047	.048	.049
Over 140 to 144, incl.	.047	.048	.049	.050
Over 144 to 148, incl.	.048	.049	.050	.051
Over 148 to 152, incl.	.049	.050	.051	.052
Over 152 to 156, incl.	.050	.051	.052	.053
Over 156 to 160, incl.	.051	.052	.053	.054
Over 160 to 164, incl.	.052	.053	.054	.055
Over 164 to 168, incl.	.053	.054	.055	.056
Over 168 to 172, incl.	.054	.055	.056	.057
Over 172 to 176, incl.	.055	.056	.057	.058
Over 176 to 180, incl.	.056	.057	.058	.059
Over 180 to 184, incl.	.057	.058	.059	.060
Over 184 to 188, incl.	.058	.059	.060	.061
Over 188 to 192, incl.	.059	.060	.061	.062
Over 192 to 196, incl.	.060	.061	.062	.063
Over 196 to 200, incl.	.061	.062	.063	.064
Over 200 to 204, incl.	.062	.063	.064	.065
Over 204 to 208, incl.	.063	.064	.065	.066
Over 208 to 212, incl.	.064	.065	.066	.067
Over 212 to 216, incl.	.065	.066	.067	.068
Over 216 to 220, incl.	.066	.067	.068	.069
Over 220 to 224, incl.	.067	.068	.069	.070
Over 224 to 228, incl.	.068	.069	.070	.071
Over 228 to 232, incl.	.069	.070	.071	.072
Over 232 to 236, incl.	.070	.071	.072	.073
Over 236 to 240, incl.	.071	.072	.073	.074
Over 240 to 244, incl.	.072	.073	.074	.075
Over 244 to 248, incl.	.073	.074	.075	.076
Over 248 to 252, incl.	.074	.075	.076	.077
Over 252 to 256, incl.	.075	.076	.077	.078
Over 256 to 260, incl.	.076	.077	.078	.079
Over 260 to 264, incl.	.077	.078	.079	.080
Over 264 to 268, incl.	.078	.079	.080	.081
Over 268 to 272, incl.	.079	.080	.081	.082
Over 272 to 276, incl.	.080	.081	.082	.083
Over 276 to 280, incl.	.081	.082	.083	.084
Over 280 to 284, incl.	.082	.083	.084	.085
Over 284 to 288, incl.	.083	.084	.085	.086
Over 288 to 292, incl.	.084	.085	.086	.087
Over 292 to 296, incl.	.085	.086	.087	.088
Over 296 to 300, incl.	.086	.087	.088	.089
Over 300 to 304, incl.	.087	.088	.089	.090
Over 304 to 308, incl.	.088	.089	.090	.091
Over 308 to 312, incl.	.089	.090	.091	.092
Over 312 to 316, incl.	.090	.091	.092	.093
Over 316 to 320, incl.	.091	.092	.093	.094
Over 320 to 324, incl.	.092	.093	.094	.095
Over 324 to 328, incl.	.093	.094	.095	.096
Over 328 to 332, incl.	.094	.095	.096	.097
Over 332 to 336, incl.	.095	.096	.097	.098
Over 336 to 340, incl.	.096	.097	.098	.099
Over 340 to 344, incl.	.097	.098	.099	.100
Over 344 to 348, incl.	.098	.099	.100	.101
Over 348 to 352, incl.	.099	.100	.101	.102
Over 352 to 356, incl.	.100	.101	.102	.103
Over 356 to 360, incl.	.101	.102	.103	.104
Over 360 to 364, incl.	.102	.103	.104	.105
Over 364 to 368, incl.	.103	.104	.105	.106
Over 368 to 372, incl.	.104	.105	.106	.107
Over 372 to 376, incl.	.105	.106	.107	.108
Over 376 to 380, incl.	.106	.107	.108	.109
Over 380 to 384, incl.	.107	.108	.109	.110
Over 384 to 388, incl.	.108	.109	.110	.111
Over 388 to 392, incl.	.109	.110	.111	.112
Over 392 to 396, incl.	.110	.111	.112	.113
Over 396 to 400, incl.	.111	.112	.113	.114
Over 400 to 404, incl.	.112	.113	.114	.115
Over 404 to 408, incl.	.113	.114	.115	.116
Over 408 to 412, incl.	.114	.115	.116	.117
Over 412 to 416, incl.	.115	.116	.117	.118
Over 416 to 420, incl.	.116	.117	.118	.119
Over 420 to 424, incl.	.117	.118	.119	.120
Over 424 to 428, incl.	.118	.119	.120	.121
Over 428 to 432, incl.	.119	.120	.121	.122
Over 432 to 436, incl.	.120	.121	.122	.123
Over 436 to 440, incl.	.121	.122	.123	.124
Over 440 to 444, incl.	.122	.123	.124	.125
Over 444 to 448, incl.	.123	.124	.125	.126
Over 448 to 452, incl.	.124	.125	.126	.127
Over 452 to 456, incl.	.125	.126	.127	.128
Over 456 to 460, incl.	.126	.127	.128	.129
Over 460 to 464, incl.	.127	.128	.129	.130
Over 464 to 468, incl.	.128	.129	.130	.131
Over 468 to 472, incl.	.129	.130	.131	.132
Over 472 to 476, incl.	.130	.131	.132	.133
Over 476 to 480, incl.	.131	.132	.133	.134
Over 480 to 484, incl.	.132	.133	.134	.135
Over 484 to 488, incl.	.133	.134	.135	.136
Over 488 to 492, incl.	.134	.135	.136	.137
Over 492 to 496, incl.	.135	.136	.137	.138
Over 496 to 500, incl.	.136	.137	.138	.139
Over 500 to 504, incl.	.137	.138	.139	.140
Over 504 to 508, incl.	.138	.139	.140	.141
Over 508 to 512, incl.	.139	.140	.141	.142
Over 512 to 516, incl.	.140	.141	.142	.143
Over 516 to 520, incl.	.141	.142	.143	.144
Over 520 to 524, incl.	.142	.143	.144	.145
Over 524 to 528, incl.	.143	.144	.145	.146
Over 528 to 532, incl.	.144	.145	.146	.147
Over 532 to 536, incl.	.145	.146	.147	.148
Over 536 to 540, incl.	.146	.147	.148	.149
Over 540 to 544, incl.	.147	.148	.149	.150
Over 544 to 548, incl.	.148	.149	.150	.151
Over 548 to 552, incl.	.149	.150	.151	.152
Over 552 to 556, incl.	.150	.151	.152	.153
Over 556 to 560, incl.	.151	.152	.153	.154
Over 560 to 564, incl.	.152	.153	.154	.155
Over 564 to 568, incl.	.153	.154	.155	.156
Over 568 to 572, incl.	.154	.155	.156	.157
Over 572 to 576, incl.	.155	.156	.157	.158
Over 576 to 580, incl.	.156	.157	.158	.159
Over 580 to 584, incl.	.157	.158	.159	.160
Over 584 to 588, incl.	.158	.159	.160	.161
Over 588 to 592, incl.	.159	.160	.161	.162
Over 592 to 596, incl.	.160	.161	.162	.163
Over 596 to 600, incl.	.161	.162	.163	.164
Over 600 to 604, incl.	.162	.163	.164	.165
Over 604 to 608, incl.	.163	.164	.165	.166
Over 608 to 612, incl.	.164	.165	.166	.167
Over 612 to 616, incl.	.165	.166	.167	.168
Over 616 to 620, incl.	.166	.167	.168	.169
Over 620 to 624, incl.	.167	.168	.169	.170
Over 624 to 628, incl.	.168	.169	.170	.171
Over 628 to 632, incl.	.169	.170	.171	.172
Over 632 to 636, incl.	.170	.171	.172	.173
Over 636 to 640, incl.	.171	.172	.173	.174
Over 640 to 644, incl.	.172	.173	.174	.175
Over 644 to 648, incl.	.173	.174	.175	.176
Over 648 to 652, incl.	.174	.175	.176	.177
Over 652 to 656, incl.	.175	.176	.177	.178
Over 656 to 660, incl.	.176	.177	.178	.179
Over 660 to 664, incl.	.177	.178	.179	.18