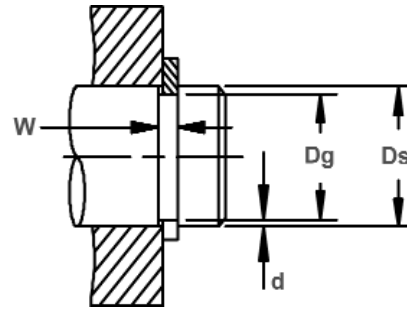
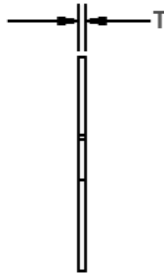
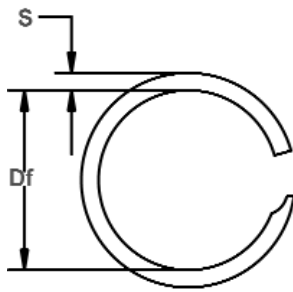


MCL Spiral Shaft Rings

External, Light Duty, Metric

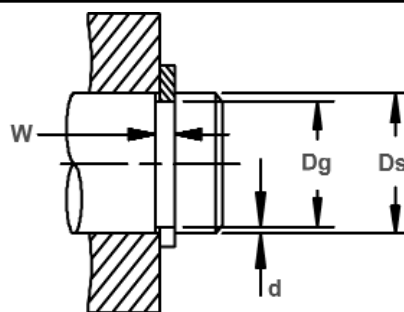
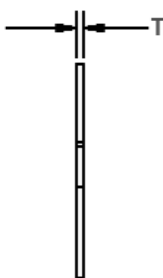
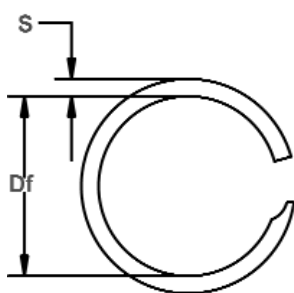
These single-turn retaining rings are ideal for light-duty applications, or where axial positioning is the primary function.



Free Diameter & Ring Measurements

Shaft Diameter & Groove Dimensions

| RING NO. | SHAFT DIAMETER | GROOVE SIZE | | | | RING SIZE | | | | | | THRUST LOAD (N) | |
|----------|----------------|-------------|-------|-------|-------|---------------|-------|-----------|-------|---------|-------|-------------------------|---------------------------|
| | | DIAMETER | | WIDTH | | FREE DIAMETER | | THICKNESS | | SECTION | | RING Safety factor of 3 | GROOVE Safety factor of 2 |
| | | (mm) | Dg | Tol. | W | Tol. | Df | Tol. | T | Tol. | S | | |
| MCL-13 | 13 | 12.4 | | 1,10 | | 12,27 | | 0,94 | | 1,40 | | 10591 | 1931 |
| MCL-14 | 14 | 13,4 | | 1,10 | | 13,31 | | 0,94 | | 1,40 | | 11396 | 2077 |
| MCL-15 | 15 | 14,3 | +0,00 | 1,10 | | 14,15 | | 0,94 | | 1,40 | | 12224 | 2602 |
| MCL-16 | 16 | 15,2 | -0,11 | 1,10 | | 14,98 | | 0,94 | | 1,65 | | 13029 | 3172 |
| MCL-17 | 17 | 16,2 | | 1,10 | | 16,06 | | 0,94 | | 1,65 | | 13838 | 3367 |
| MCL-18 | 18 | 17,0 | | 1,30 | | 16,82 | | 1,15 | | 1,90 | | 17953 | 4457 |
| MCL-19 | 19 | 18,0 | | 1,30 | | 17,81 | +0,00 | 1,15 | | 1,90 | | 18941 | 4702 |
| MCL-20 | 20 | 19,0 | | 1,30 | | 18,80 | -0,33 | 1,15 | | 1,90 | | 19928 | 4951 |
| MCL-21 | 21 | 20,0 | +0,00 | 1,30 | | 19,79 | | 1,15 | | 1,90 | | 20942 | 5200 |
| MCL-22 | 22 | 21,0 | -0,13 | 1,30 | | 20,83 | | 1,15 | | 1,90 | | 21930 | 5445 |
| MCL-23 | 23 | 22,0 | | 1,30 | | 21,77 | | 1,15 | | 1,90 | | 22939 | 5698 |
| MCL-24 | 24 | 22,9 | | 1,30 | | 22,50 | | 1,15 | | 2,15 | | 23927 | 6539 |
| MCL-25 | 25 | 23,9 | | 1,30 | | 23,70 | | 1,15 | | 2,15 | | 24914 | 6806 |
| MCL-26 | 26 | 24,9 | +0,00 | 1,30 | | 24,64 | | 1,15 | ±0,05 | 2,15 | ±0,10 | 25929 | 7082 |
| MCL-27 | 27 | 25,9 | -0,21 | 1,30 | | 25,50 | | 1,15 | | 2,15 | | 26916 | 7353 |
| MCL-28 | 28 | 26,6 | | 1,60 | | 26,32 | | 1,44 | | 3,25 | | 33179 | 9702 |
| MCL-29 | 29 | 27,6 | | 1,60 | | 27,15 | | 1,44 | | 3,25 | | 34385 | 10053 |
| MCL-30 | 30 | 28,6 | | 1,60 | +0,14 | 28,35 | | 1,44 | | 3,25 | | 35559 | 10395 |
| MCL-32 | 32 | 30,3 | | 1,60 | -0,00 | 29,87 | +0,00 | 1,44 | | 3,25 | | 37939 | 13073 |
| MCL-33 | 33 | 31,3 | | 1,60 | | 31,07 | -0,38 | 1,44 | | 3,25 | | 39113 | 13478 |
| MCL-34 | 34 | 32,3 | | 1,60 | | 31,96 | | 1,44 | | 3,25 | | 40319 | 13892 |
| MCL-35 | 35 | 33,0 | | 1,60 | | 32,57 | | 1,44 | | 3,25 | | 41493 | 16899 |
| MCL-36 | 36 | 34,0 | | 1,85 | | 33,64 | | 1,69 | | 4,01 | | 50038 | 17375 |
| MCL-38 | 38 | 36,0 | +0,00 | 1,85 | | 35,62 | | 1,69 | | 4,01 | | 52827 | 18344 |
| MCL-40 | 40 | 37,5 | -0,25 | 1,85 | | 37,02 | | 1,69 | | 4,01 | | 55621 | 24265 |
| MCL-42 | 42 | 39,5 | | 1,85 | | 39,08 | | 1,69 | | 4,01 | | 58410 | 25484 |
| MCL-45 | 45 | 42,5 | | 1,85 | | 42,05 | +0,00 | 1,69 | | 4,01 | | 62578 | 27303 |
| MCL-46 | 46 | 43,5 | | 1,85 | | 43,10 | -0,51 | 1,69 | | 4,01 | | 63952 | 27904 |
| MCL-47 | 47 | 44,5 | | 1,85 | | 44,03 | | 1,69 | | 4,01 | | 65331 | 28504 |
| MCL-48 | 48 | 45,5 | | 1,85 | | 44,89 | | 1,69 | | 4,01 | | 66741 | 29118 |
| MCL-50 | 50 | 47,0 | | 2,15 | | 46,50 | | 1,93 | | 5,08 | | 75282 | 36529 |
| MCL-52 | 52 | 49,0 | | 2,15 | | 48,48 | | 1,93 | | 5,08 | | 78266 | 37974 |
| MCL-54 | 54 | 51,0 | | 2,15 | | 50,46 | | 1,93 | | 5,08 | | 81287 | 39438 |
| MCL-55 | 55 | 52,0 | | 2,15 | | 51,45 | | 1,93 | | 5,08 | | 82777 | 40163 |
| MCL-56 | 56 | 53,0 | | 2,15 | | 52,44 | +0,00 | 1,93 | | 5,08 | | 84307 | 40906 |
| MCL-58 | 58 | 55,0 | | 2,15 | | 54,42 | -0,63 | 1,93 | | 5,08 | | 87287 | 42352 |
| MCL-60 | 60 | 57,0 | | 2,15 | | 56,55 | | 1,93 | | 5,08 | | 90308 | 43819 |
| MCL-62 | 62 | 59,0 | +0,00 | 2,15 | | 58,32 | | 1,93 | ±0,08 | 5,08 | ±0,13 | 93328 | 45283 |
| MCL-63 | 63 | 60,0 | -0,30 | 2,15 | | 59,37 | | 1,93 | | 5,08 | | 94823 | 46008 |
| MCL-65 | 65 | 62,0 | | 2,65 | | 61,35 | | 2,41 | | 5,08 | | 116641 | 47471 |
| MCL-67 | 67 | 64,0 | | 2,65 | | 63,35 | | 2,41 | | 5,08 | | 120240 | 48939 |
| MCL-68 | 68 | 65,0 | | 2,65 | | 64,45 | +0,00 | 2,41 | | 5,08 | | 122019 | 49660 |
| MCL-70 | 70 | 67,0 | | 2,65 | | 66,22 | -0,76 | 2,41 | | 5,08 | | 125618 | 51128 |
| MCL-72 | 72 | 69,0 | | 2,65 | | 68,62 | | 2,41 | | 5,08 | | 129221 | 52591 |



Free Diameter & Ring Measurements

Shaft Diameter & Groove Dimensions

| RING NO. | SHAFT DIAMETER | GROOVE SIZE | | | | RING SIZE | | | | | | THRUST LOAD (N) | | |
|----------|----------------|-------------|-------|-------|------|---------------|--------|-----------|------|---------|-------|-------------------------|---------------------------|--------|
| | | DIAMETER | | WIDTH | | FREE DIAMETER | | THICKNESS | | SECTION | | RING Safety factor of 3 | GROOVE Safety factor of 2 | |
| | | (mm) | Dg | Tol. | W | Tol. | Df | Tol. | T | Tol. | S | | | Tol. |
| MCL-75 | 75 | 72,0 | | | 2,65 | | 71,25 | | 2,41 | | 5,08 | | 134599 | 54780 |
| MCL-77 | 77 | 74,0 | +0,00 | | 2,65 | +0,14 | 73,23 | | 2,41 | | 5,08 | | 138153 | 56230 |
| MCL-78 | 78 | 75,0 | -0,30 | | 2,65 | -0,00 | 74,06 | +0,00 | 2,41 | | 5,08 | | 139977 | 56968 |
| MCL-80 | 80 | 76,50 | | | 2,65 | | 75,70 | -0,76 | 2,41 | | 6,02 | | 143575 | 68342 |
| MCL-82 | 82 | 78,50 | | | 2,65 | | 77,68 | | 2,41 | | 6,02 | | 147134 | 70033 |
| MCL-85 | 85 | 81,50 | | | 3,15 | | 80,65 | | 2,91 | ±0,08 | 6,30 | | 175656 | 72595 |
| MCL-88 | 88 | 84,50 | | | 3,15 | | 83,60 | | 2,91 | | 6,30 | | 181906 | 75175 |
| MCL-90 | 90 | 86,50 | +0,00 | | 3,15 | +0,00 | 85,80 | +0,00 | 2,91 | | 6,30 | | 185998 | 76865 |
| MCL-95 | 95 | 91,50 | -0,35 | | 3,15 | -0,89 | 90,68 | -0,89 | 2,91 | | 6,30 | | 196340 | 81140 |
| MCL-98 | 98 | 94,50 | | | 3,15 | | 93,70 | | 2,91 | | 6,30 | | 202536 | 83702 |
| MCL-100 | 100 | 96,50 | | | 3,15 | | 95,50 | | 2,91 | | 6,30 | | 206682 | 85415 |
| MCL-102 | 102 | 98,50 | | | 3,15 | | 97,23 | | 2,91 | | 6,30 | ±0,13 | 210828 | 87127 |
| MCL-105 | 105 | 100,00 | | | 4,15 | | 99,83 | | 3,89 | | 6,73 | | 276951 | 102687 |
| MCL-108 | 108 | 104,00 | +0,00 | | 4,15 | -0,54 | 102,87 | -0,54 | 3,89 | | 6,73 | | 284855 | 105619 |
| MCL-110 | 110 | 106,00 | -0,54 | | 4,15 | | 104,90 | | 3,89 | | 6,73 | | 290149 | 107580 |
| MCL-115 | 115 | 111,00 | | | 4,15 | +0,00 | 109,85 | +0,00 | 3,89 | | 6,73 | | 303346 | 112473 |
| MCL-120 | 120 | 116,00 | | | 4,15 | -1,30 | 115,06 | -1,30 | 3,89 | | 6,73 | | 316478 | 117344 |
| MCL-125 | 125 | 121,00 | | | 4,15 | | 119,75 | | 3,89 | | 6,73 | | 329676 | 122237 |
| MCL-130 | 130 | 126,00 | | | 4,15 | | 124,70 | | 3,89 | | 6,73 | | 342873 | 127130 |
| MCL-135 | 135 | 131,00 | | | 4,15 | | 129,65 | | 3,89 | | 6,73 | | 356071 | 132023 |
| MCL-140 | 140 | 136,00 | | | 4,15 | | 134,42 | | 3,89 | ±0,10 | 6,73 | | 369269 | 136916 |
| MCL-145 | 145 | 141,00 | | | 4,15 | | 139,55 | | 3,89 | | 6,73 | | 382467 | 141809 |
| MCL-150 | 150 | 145,00 | +0,00 | | 4,15 | +0,18 | 143,50 | +0,18 | 3,89 | | 8,03 | | 395665 | 181986 |
| MCL-155 | 155 | 150,00 | -0,63 | | 4,15 | -0,00 | 148,45 | -0,00 | 3,89 | | 8,03 | | 408796 | 188026 |
| MCL-160 | 160 | 155,00 | | | 4,15 | +0,00 | 153,40 | +0,00 | 3,89 | | 8,03 | | 421994 | 194094 |
| MCL-165 | 165 | 160,00 | | | 4,15 | -1,52 | 158,40 | -1,52 | 3,89 | | 8,03 | | 435192 | 200166 |
| MCL-170 | 170 | 165,00 | | | 4,15 | | 163,30 | | 3,89 | | 8,03 | | 448683 | 206237 |
| MCL-175 | 175 | 170,00 | | | 4,15 | | 168,25 | | 3,89 | | 8,03 | ±0,15 | 461890 | 212305 |
| MCL-180 | 180 | 175,00 | | | 4,15 | | 173,20 | | 3,89 | | 8,03 | | 475097 | 218377 |
| MCL-185 | 185 | 180,00 | | | 4,15 | | 177,62 | | 3,89 | | 8,03 | | 488232 | 224417 |
| MCL-190 | 190 | 185,00 | | | 4,15 | | 183,35 | | 3,89 | | 8,03 | | 501439 | 230489 |
| MCL-195 | 195 | 190,00 | | | 4,15 | | 188,05 | | 3,89 | | 8,03 | | 514646 | 236556 |
| MCL-200 | 200 | 195,00 | | | 4,15 | +0,00 | 193,00 | +0,00 | 3,89 | | 8,03 | | 527853 | 242628 |
| MCL-205 | 205 | 199,00 | +0,00 | | 5,15 | -1,78 | 196,95 | -1,78 | 4,87 | | 11,05 | | 641438 | 299454 |
| MCL-210 | 210 | 204,00 | -0,72 | | 5,15 | | 201,67 | | 4,87 | | 11,05 | | 657096 | 306763 |
| MCL-220 | 220 | 214,00 | | | 5,15 | | 211,80 | | 4,87 | | 11,05 | | 688327 | 321344 |
| MCL-230 | 230 | 224,00 | | | 5,15 | | 221,70 | | 4,87 | | 11,05 | | 719638 | 335961 |
| MCL-240 | 240 | 234,00 | | | 5,15 | | 231,89 | | 4,87 | | 11,05 | | 750953 | 350578 |
| MCL-250 | 250 | 244,00 | | | 5,15 | | 241,50 | | 4,87 | ±0,13 | 11,05 | ±0,18 | 782264 | 365199 |
| MCL-260 | 260 | 252,00 | | | 5,15 | | 249,59 | | 4,87 | | 12,70 | | 813500 | 505300 |
| MCL-270 | 270 | 262,00 | +0,00 | | 5,15 | +0,00 | 259,30 | +0,00 | 4,87 | | 12,70 | | 844811 | 524748 |
| MCL-280 | 280 | 272,00 | -0,81 | | 5,15 | -2,30 | 268,83 | -2,30 | 4,87 | | 12,70 | | 876126 | 544200 |
| MCL-290 | 290 | 282,00 | | | 5,15 | | 279,10 | | 4,87 | | 12,70 | | 907357 | 563599 |
| MCL-300 | 300 | 292,00 | | | 5,15 | | 289,00 | | 4,87 | | 12,70 | | 938673 | 583051 |