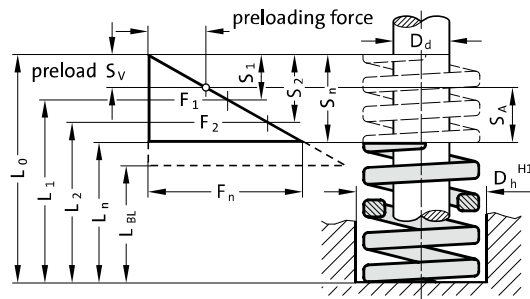


HIGH PERFORMANCE COMPRESSION SPRING, XSF, COLOUR "VIOLET"

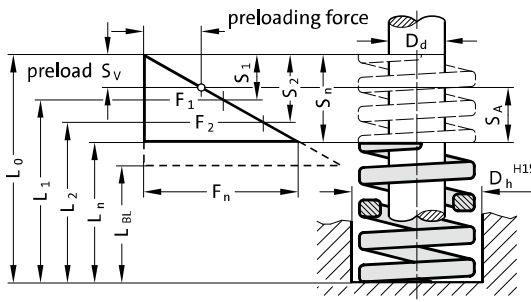


- D_h = dia. of guide sleeve
- D_d = diameter of guide pin
- L_0 = free length of spring
- $L_1...L_n$ = length of loaded spring (mm) as related to spring forces $F_1...F_n$
- L_{BL} = length of compacted spring (i.e. wire-to-wire)
- $F_1...F_n$ = forces (N) as related to length of spring $L_1...L_n$
- $S_{V1}...S_{V7}$ = recommend. preload. compression, as relat. to compress. $S_1...S_7$
- $S_1...S_n$ = compr. as related to spring forces $F_1...F_n$
- R = spring rate (N/mm)
- $S_{A1}...S_{A7}$ = working stroke (mm)

241.13. High performance compression spring, XSF, Colour "Violet"

| Order No | D_h | D_d | L_0 | R | 45% | | | | 62% | | | | 80% | | | | 100% | | |
|---------------|-------|-------|-------|------|-------|----------|----------|-------|-------|----------|----------|-------|-------|----------|----------|-------|-------|-------|--|
| | | | | | S_1 | S_{V1} | S_{A1} | F_1 | S_2 | S_{V2} | S_{A2} | F_2 | S_3 | S_{V3} | S_{A3} | F_3 | S_n | F_n | |
| 241.13.20.025 | 20 | 10 | 25 | 32.1 | 6.3 | 1.8 | 4.5 | 202 | 8.7 | 4.2 | 4.5 | 279 | 11.2 | 8.1 | 3.1 | 360 | 14 | 449 | |
| 241.13.20.032 | 20 | 10 | 32 | 24.7 | 8.1 | 2.3 | 5.8 | 200 | 11.2 | 5.4 | 5.8 | 276 | 14.4 | 10.4 | 4 | 356 | 18 | 445 | |
| 241.13.20.038 | 20 | 10 | 38 | 20.7 | 9.9 | 2.9 | 7 | 205 | 13.6 | 6.6 | 7 | 282 | 17.6 | 12.8 | 4.8 | 364 | 22 | 455 | |
| 241.13.20.044 | 20 | 10 | 44 | 17.8 | 11.7 | 3.4 | 8.3 | 208 | 16.1 | 7.8 | 8.3 | 287 | 20.8 | 15.1 | 5.7 | 370 | 26 | 463 | |
| 241.13.20.051 | 20 | 10 | 51 | 15.3 | 13.5 | 3.9 | 9.6 | 207 | 18.6 | 9 | 9.6 | 285 | 24 | 17.4 | 6.6 | 367 | 30 | 459 | |
| 241.13.20.064 | 20 | 10 | 64 | 12.1 | 17.1 | 4.9 | 12.2 | 207 | 23.6 | 11.4 | 12.2 | 285 | 30.4 | 22 | 8.4 | 368 | 38 | 460 | |
| 241.13.20.076 | 20 | 10 | 76 | 10.2 | 20.2 | 5.8 | 14.4 | 207 | 27.9 | 13.5 | 14.4 | 285 | 36 | 26.1 | 9.9 | 367 | 45 | 459 | |
| 241.13.20.089 | 20 | 10 | 89 | 8.6 | 23.8 | 6.9 | 17 | 205 | 32.9 | 15.9 | 17 | 283 | 42.4 | 30.7 | 11.7 | 365 | 53 | 456 | |
| 241.13.20.102 | 20 | 10 | 102 | 7.5 | 27.9 | 8.1 | 19.8 | 209 | 38.4 | 18.6 | 19.8 | 288 | 49.6 | 36 | 13.6 | 372 | 62 | 465 | |
| 241.13.20.115 | 20 | 10 | 115 | 6.7 | 31.5 | 9.1 | 22.4 | 211 | 43.4 | 21 | 22.4 | 291 | 56 | 40.6 | 15.4 | 375 | 70 | 469 | |
| 241.13.20.127 | 20 | 10 | 127 | 6.1 | 34.6 | 10 | 24.6 | 211 | 47.7 | 23.1 | 24.6 | 291 | 61.6 | 44.7 | 16.9 | 376 | 77 | 470 | |
| 241.13.20.139 | 20 | 10 | 139 | 5.5 | 38.2 | 11 | 27.2 | 210 | 52.7 | 25.5 | 27.2 | 290 | 68 | 49.3 | 18.7 | 374 | 85 | 468 | |
| 241.13.20.152 | 20 | 10 | 152 | 5.1 | 41.8 | 12.1 | 29.8 | 213 | 57.7 | 27.9 | 29.8 | 294 | 74.4 | 53.9 | 20.5 | 379 | 93 | 474 | |
| 241.13.20.305 | 20 | 10 | 305 | 2.5 | 84.6 | 24.4 | 60.2 | 212 | 116.6 | 56.4 | 60.2 | 291 | 150.4 | 109 | 41.4 | 376 | 188 | 470 | |
| 241.13.25.025 | 25 | 12 | 25 | 52.7 | 6.3 | 1.8 | 4.5 | 332 | 8.7 | 4.2 | 4.5 | 457 | 11.2 | 8.1 | 3.1 | 590 | 14 | 738 | |
| 241.13.25.032 | 25 | 12 | 32 | 40 | 8.1 | 2.3 | 5.8 | 324 | 11.2 | 5.4 | 5.8 | 446 | 14.4 | 10.4 | 4 | 576 | 18 | 720 | |
| 241.13.25.038 | 25 | 12 | 38 | 33.3 | 9.9 | 2.9 | 7 | 330 | 13.6 | 6.6 | 7 | 454 | 17.6 | 12.8 | 4.8 | 586 | 22 | 733 | |
| 241.13.25.044 | 25 | 12 | 44 | 28.6 | 11.2 | 3.2 | 8 | 322 | 15.5 | 7.5 | 8 | 443 | 20 | 14.5 | 5.5 | 572 | 25 | 715 | |
| 241.13.25.051 | 25 | 12 | 51 | 24.7 | 13.5 | 3.9 | 9.6 | 333 | 18.6 | 9 | 9.6 | 459 | 24 | 17.4 | 6.6 | 593 | 30 | 741 | |
| 241.13.25.064 | 25 | 12 | 64 | 19.4 | 17.1 | 4.9 | 12.2 | 332 | 23.6 | 11.4 | 12.2 | 457 | 30.4 | 22 | 8.4 | 590 | 38 | 737 | |
| 241.13.25.076 | 25 | 12 | 76 | 16.3 | 20.2 | 5.8 | 14.4 | 330 | 27.9 | 13.5 | 14.4 | 455 | 36 | 26.1 | 9.9 | 587 | 45 | 734 | |
| 241.13.25.089 | 25 | 12 | 89 | 15.9 | 23.8 | 6.9 | 17 | 379 | 32.9 | 15.9 | 17 | 522 | 42.4 | 30.7 | 11.7 | 674 | 53 | 843 | |
| 241.13.25.102 | 25 | 12 | 102 | 12.1 | 27.4 | 7.9 | 19.5 | 332 | 37.8 | 18.3 | 19.5 | 458 | 48.8 | 35.4 | 13.4 | 590 | 61 | 738 | |
| 241.13.25.115 | 25 | 12 | 115 | 10.8 | 31.5 | 9.1 | 22.4 | 340 | 43.4 | 21 | 22.4 | 469 | 56 | 40.6 | 15.4 | 605 | 70 | 756 | |
| 241.13.25.127 | 25 | 12 | 127 | 9.8 | 34.6 | 10 | 24.6 | 340 | 47.7 | 23.1 | 24.6 | 468 | 61.6 | 44.7 | 16.9 | 604 | 77 | 755 | |
| 241.13.25.139 | 25 | 12 | 139 | 8.9 | 38.2 | 11 | 27.2 | 340 | 52.7 | 25.5 | 27.2 | 469 | 68 | 49.3 | 18.7 | 605 | 85 | 756 | |
| 241.13.25.152 | 25 | 12 | 152 | 8.1 | 41.8 | 12.1 | 29.8 | 339 | 57.7 | 27.9 | 29.8 | 467 | 74.4 | 53.9 | 20.5 | 603 | 93 | 753 | |
| 241.13.25.178 | 25 | 12 | 178 | 6.9 | 49 | 14.2 | 34.9 | 338 | 67.6 | 32.7 | 34.9 | 466 | 87.2 | 63.2 | 24 | 602 | 109 | 752 | |
| 241.13.25.203 | 25 | 12 | 203 | 6.1 | 55.8 | 16.1 | 39.7 | 340 | 76.9 | 37.2 | 39.7 | 469 | 99.2 | 71.9 | 27.3 | 605 | 124 | 756 | |
| 241.13.25.305 | 25 | 12 | 305 | 4 | 84.6 | 24.4 | 60.2 | 338 | 116.6 | 56.4 | 60.2 | 466 | 150.4 | 109 | 41.4 | 602 | 188 | 752 | |
| 241.13.32.038 | 32 | 16 | 38 | 43.8 | 9.9 | 2.9 | 7 | 434 | 13.6 | 6.6 | 7 | 597 | 17.6 | 12.8 | 4.8 | 771 | 22 | 964 | |
| 241.13.32.044 | 32 | 16 | 44 | 37.5 | 11.7 | 3.4 | 8.3 | 439 | 16.1 | 7.8 | 8.3 | 604 | 20.8 | 15.1 | 5.7 | 780 | 26 | 975 | |
| 241.13.32.051 | 32 | 16 | 51 | 32.3 | 14 | 4 | 9.9 | 451 | 19.2 | 9.3 | 9.9 | 621 | 24.8 | 18 | 6.8 | 801 | 31 | 1001 | |
| 241.13.32.064 | 32 | 16 | 64 | 25.4 | 17.6 | 5.1 | 12.5 | 446 | 24.2 | 11.7 | 12.5 | 614 | 31.2 | 22.6 | 8.6 | 792 | 39 | 991 | |
| 241.13.32.076 | 32 | 16 | 76 | 21.3 | 21.2 | 6.1 | 15 | 450 | 29.1 | 14.1 | 15 | 621 | 37.6 | 27.3 | 10.3 | 801 | 47 | 1001 | |
| 241.13.32.089 | 32 | 16 | 89 | 18.1 | 25.2 | 7.3 | 17.9 | 456 | 34.7 | 16.8 | 17.9 | 628 | 44.8 | 32.5 | 12.3 | 811 | 56 | 1014 | |
| 241.13.32.102 | 32 | 16 | 102 | 15.8 | 28.8 | 8.3 | 20.5 | 455 | 39.7 | 19.2 | 20.5 | 627 | 51.2 | 37.1 | 14.1 | 809 | 64 | 1011 | |
| 241.13.32.115 | 32 | 16 | 115 | 13.9 | 32.8 | 9.5 | 23.4 | 457 | 45.3 | 21.9 | 23.4 | 629 | 58.4 | 42.3 | 16.1 | 812 | 73 | 1015 | |
| 241.13.32.127 | 32 | 16 | 127 | 12.6 | 36.4 | 10.5 | 25.9 | 459 | 50.2 | 24.3 | 25.9 | 633 | 64.8 | 47 | 17.8 | 816 | 81 | 1021 | |
| 241.13.32.139 | 32 | 16 | 139 | 11.4 | 40 | 11.6 | 28.5 | 457 | 55.2 | 26.7 | 28.5 | 629 | 71.2 | 51.6 | 19.6 | 812 | 89 | 1015 | |
| 241.13.32.152 | 32 | 16 | 152 | 10.5 | 43.6 | 12.6 | 31 | 458 | 60.1 | 29.1 | 31 | 631 | 77.6 | 56.3 | 21.3 | 815 | 97 | 1018 | |
| 241.13.32.178 | 32 | 16 | 178 | 8.9 | 51.3 | 14.8 | 36.5 | 457 | 70.7 | 34.2 | 36.5 | 629 | 91.2 | 66.1 | 25.1 | 812 | 114 | 1015 | |
| 241.13.32.203 | 32 | 16 | 203 | 7.8 | 59 | 17 | 41.9 | 460 | 81.2 | 39.3 | 41.9 | 634 | 104.8 | 76 | 28.8 | 817 | 131 | 1022 | |
| 241.13.32.254 | 32 | 16 | 254 | 6.2 | 73.4 | 21.2 | 52.2 | 455 | 101.1 | 48.9 | 52.2 | 627 | 130.4 | 94.5 | 35.9 | 808 | 163 | 1011 | |

HIGH PERFORMANCE COMPRESSION SPRING, XSF, COLOUR "VIOLET"



- D_h = dia. of guide sleeve
- D_d = diameter of guide pin
- L_0 = free length of spring
- $L_1...L_n$ = length of loaded spring (mm) as related to spring forces $F_1...F_n$
- L_{BL} = length of compacted spring (i.e. wire-to-wire)
- $F_1...F_n$ = forces (N) as related to length of spring $L_1...L_n$
- $S_{V1}...S_{V7}$ = recommend. preload. compression, as relat. to compress. $S_1...S_7$
- $S_1...S_n$ = compr. as related to spring forces $F_1...F_n$
- R = spring rate (N/mm)
- $S_{A1}...S_{A7}$ = working stroke (mm)



241.13. High performance compression spring, XSF, Colour "Violet"

| Order No | D_h | D_d | L_0 | R | 45% | | | | 62% | | | | 80% | | | | 100% | | | |
|---------------|-------|-------|-------|------|-------|----------|----------|-------|-------|----------|----------|-------|-------|----------|----------|-------|-------|-------|--|--|
| | | | | | S_1 | S_{V1} | S_{A1} | F_1 | S_2 | S_{V2} | S_{A2} | F_2 | S_3 | S_{V3} | S_{A3} | F_3 | S_n | F_n | | |
| 241.13.32.305 | 32 | 16 | 305 | 5.2 | 88.6 | 25.6 | 63 | 461 | 122.1 | 59.1 | 63 | 635 | 157.6 | 114.3 | 43.3 | 820 | 197 | 1024 | | |
| 241.13.40.051 | 40 | 20 | 51 | 50.8 | 11.7 | 3.4 | 8.3 | 594 | 16.1 | 7.8 | 8.3 | 819 | 20.8 | 15.1 | 5.7 | 1057 | 26 | 1321 | | |
| 241.13.40.064 | 40 | 20 | 64 | 39.7 | 15.3 | 4.4 | 10.9 | 607 | 21.1 | 10.2 | 10.9 | 837 | 27.2 | 19.7 | 7.5 | 1080 | 34 | 1350 | | |
| 241.13.40.076 | 40 | 20 | 76 | 33.1 | 18 | 5.2 | 12.8 | 596 | 24.8 | 12 | 12.8 | 821 | 32 | 23.2 | 8.8 | 1059 | 40 | 1324 | | |
| 241.13.40.089 | 40 | 20 | 89 | 28.1 | 21.6 | 6.2 | 15.4 | 607 | 29.8 | 14.4 | 15.4 | 836 | 38.4 | 27.8 | 10.6 | 1079 | 48 | 1349 | | |
| 241.13.40.102 | 40 | 20 | 102 | 24.5 | 24.8 | 7.2 | 17.6 | 606 | 34.1 | 16.5 | 17.6 | 835 | 44 | 31.9 | 12.1 | 1078 | 55 | 1348 | | |
| 241.13.40.115 | 40 | 20 | 115 | 21.6 | 28.4 | 8.2 | 20.2 | 612 | 39.1 | 18.9 | 20.2 | 844 | 50.4 | 36.5 | 13.9 | 1089 | 63 | 1361 | | |
| 241.13.40.127 | 40 | 20 | 127 | 19.5 | 31.5 | 9.1 | 22.4 | 614 | 43.4 | 21 | 22.4 | 846 | 56 | 40.6 | 15.4 | 1092 | 70 | 1365 | | |
| 241.13.40.139 | 40 | 20 | 139 | 17.8 | 34.2 | 9.9 | 24.3 | 609 | 47.1 | 22.8 | 24.3 | 839 | 60.8 | 44.1 | 16.7 | 1082 | 76 | 1353 | | |
| 241.13.40.152 | 40 | 20 | 152 | 16.3 | 37.8 | 10.9 | 26.9 | 616 | 52.1 | 25.2 | 26.9 | 849 | 67.2 | 48.7 | 18.5 | 1095 | 84 | 1369 | | |
| 241.13.40.178 | 40 | 20 | 178 | 13.8 | 44.6 | 12.9 | 31.7 | 615 | 61.4 | 29.7 | 31.7 | 847 | 79.2 | 57.4 | 21.8 | 1093 | 99 | 1366 | | |
| 241.13.40.203 | 40 | 20 | 203 | 12.1 | 50.8 | 14.7 | 36.2 | 615 | 70.1 | 33.9 | 36.2 | 848 | 90.4 | 65.5 | 24.9 | 1094 | 113 | 1367 | | |
| 241.13.40.254 | 40 | 20 | 254 | 9.7 | 63.9 | 18.5 | 45.4 | 620 | 88 | 42.6 | 45.4 | 854 | 113.6 | 82.4 | 31.2 | 1102 | 142 | 1377 | | |
| 241.13.40.305 | 40 | 20 | 305 | 8 | 77 | 22.2 | 54.7 | 616 | 106 | 51.3 | 54.7 | 848 | 136.8 | 99.2 | 37.6 | 1094 | 171 | 1368 | | |
| 241.13.50.064 | 50 | 25 | 64 | 80.2 | 16.6 | 4.8 | 11.8 | 1335 | 22.9 | 11.1 | 11.8 | 1840 | 29.6 | 21.5 | 8.1 | 2374 | 37 | 2967 | | |
| 241.13.50.076 | 50 | 25 | 76 | 66.9 | 20.2 | 5.8 | 14.4 | 1355 | 27.9 | 13.5 | 14.4 | 1867 | 36 | 26.1 | 9.9 | 2408 | 45 | 3010 | | |
| 241.13.50.089 | 50 | 25 | 89 | 56.6 | 23.8 | 6.9 | 17 | 1350 | 32.9 | 15.9 | 17 | 1860 | 42.4 | 30.7 | 11.7 | 2400 | 53 | 3000 | | |
| 241.13.50.102 | 50 | 25 | 102 | 40.3 | 27.9 | 8.1 | 19.8 | 1124 | 38.4 | 18.6 | 19.8 | 1549 | 49.6 | 36 | 13.6 | 1999 | 62 | 2499 | | |
| 241.13.50.115 | 50 | 25 | 115 | 43.5 | 31.5 | 9.1 | 22.4 | 1370 | 43.4 | 21 | 22.4 | 1888 | 56 | 40.6 | 15.4 | 2436 | 70 | 3045 | | |
| 241.13.50.127 | 50 | 25 | 127 | 39.3 | 35.1 | 10.1 | 25 | 1379 | 48.4 | 23.4 | 25 | 1901 | 62.4 | 45.2 | 17.2 | 2452 | 78 | 3065 | | |
| 241.13.50.139 | 50 | 25 | 139 | 35.8 | 38.2 | 11 | 27.2 | 1369 | 52.7 | 25.5 | 27.2 | 1887 | 68 | 49.3 | 18.7 | 2434 | 85 | 3043 | | |
| 241.13.50.152 | 50 | 25 | 152 | 32.8 | 42.3 | 12.2 | 30.1 | 1387 | 58.3 | 28.2 | 30.1 | 1912 | 75.2 | 54.5 | 20.7 | 2467 | 94 | 3083 | | |
| 241.13.50.178 | 50 | 25 | 178 | 27.8 | 49.5 | 14.3 | 35.2 | 1376 | 68.2 | 33 | 35.2 | 1896 | 88 | 63.8 | 24.2 | 2446 | 110 | 3058 | | |
| 241.13.50.203 | 50 | 25 | 203 | 24.2 | 56.7 | 16.4 | 40.3 | 1372 | 78.1 | 37.8 | 40.3 | 1891 | 100.8 | 73.1 | 27.7 | 2439 | 126 | 3049 | | |
| 241.13.50.254 | 50 | 25 | 254 | 19.2 | 71.6 | 20.7 | 50.9 | 1374 | 98.6 | 47.7 | 50.9 | 1893 | 127.2 | 92.2 | 35 | 2442 | 159 | 3053 | | |
| 241.13.50.305 | 50 | 25 | 305 | 16 | 86.4 | 25 | 61.4 | 1382 | 119 | 57.6 | 61.4 | 1905 | 153.6 | 111.4 | 42.2 | 2458 | 192 | 3072 | | |