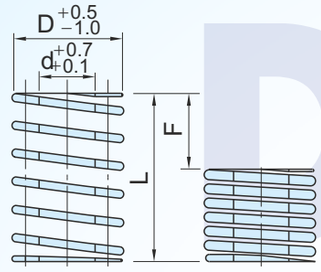
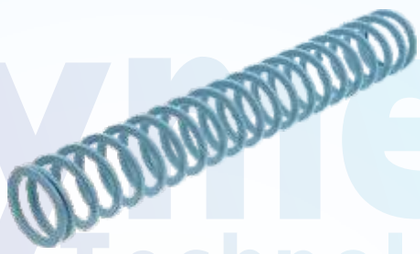
# Coil Springs –
## SUPER HIGH DEFLECTION DSWU



Load ± 10%
Squareness 3° or less
Free length L 50 or less ± 0.5mm
55 or more ± 1.5%

Coil direction Right: Sectional drawing

◖ For information on the D dimension and the counterbore hole, and also the d dimension and the shaft

**◖ F(Allowable deflection) is due to the measurement at normal temperature (40°C)**

Maximum allowable deflection at high temperature (150°/200°C).

| Part No. Type D-L | D | d | L | Spring Constant N/mm{kgf/mm} | F =L x 60% Fmm | F =L x 60% Load N{kgf} |
|---|---|---|---|---|---|---|
| DSWU10.5 - 15 | 10.5 | 6.0 | 15 | 7.63 {0.78} | 9.0 | 68.6 {7.0} |
| 20 | | | 20 | 5.72 {0.58} | 12.0 | |
| 25 | | | 25 | 4.58 {0.47} | 15.0 | |
| 30 | | | 30 | 3.81 {0.39} | 18.0 | |
| 35 | | | 35 | 3.27 {0.33} | 21.0 | |
| 40 | | | 40 | 2.86 {0.29} | 24.0 | |
| 45 | | | 45 | 2.54 {0.26} | 27.0 | |
| 50 | | | 50 | 2.29 {0.23} | 30.0 | |
| 55 | | | 55 | 2.08 {0.21} | 33.0 | |
| 60 | | | 60 | 1.91 {0.19} | 36.0 | |
| 65 | | | 65 | 1.76 {0.18} | 39.0 | |
| 70 | | | 70 | 1.63 {0.17} | 42.0 | |
| 75 | | | 75 | 1.53 {0.16} | 45.0 | |
| 80 | | | 80 | 1.43 {0.15} | 48.0 | |
| DSWU12.5 - 15 | 12.5 | 7.0 | 15 | 8.72 {0.89} | 9.0 | 78.5 {8.0} |
| 20 | | | 20 | 6.54 {0.67} | 12.0 | |
| 25 | | | 25 | 5.23 {0.53} | 15.0 | |
| 30 | | | 30 | 4.36 {0.44} | 18.0 | |
| 35 | | | 35 | 3.74 {0.38} | 21.0 | |
| 40 | | | 40 | 3.27 {0.33} | 24.0 | |
| 45 | | | 45 | 2.91 {0.30} | 27.0 | |
| 50 | | | 50 | 2.62 {0.27} | 30.0 | |
| 55 | | | 55 | 2.38 {0.24} | 33.0 | |
| 60 | | | 60 | 2.18 {0.22} | 36.0 | |
| 65 | | | 65 | 2.01 {0.21} | 39.0 | |
| 70 | | | 70 | 1.87 {0.19} | 42.0 | |
| 75 | | | 75 | 1.74 {0.18} | 45.0 | |
| 80 | | | 80 | 1.63 {0.17} | 48.0 | |
| 90 | | | 90 | 1.45 {0.15} | 54.0 | |
| 100 | | | 100 | 1.31 {0.13} | 60.0 | |
| DSWU14.5 - 15 | 14.5 | 8.5 | 15 | 10.90 {1.11} | 9.0 | 98.1 {10.0} |
| 20 | | | 20 | 8.17 {0.83} | 12.0 | |
| 25 | | | 25 | 6.54 {0.67} | 15.0 | |
| 30 | | | 30 | 5.45 {0.56} | 18.0 | |
| 35 | | | 35 | 4.67 {0.48} | 21.0 | |
| 40 | | | 40 | 4.09 {0.42} | 24.0 | |
| 45 | | | 45 | 3.63 {0.37} | 27.0 | |
| 50 | | | 50 | 3.27 {0.33} | 30.0 | |
| 55 | | | 55 | 2.97 {0.30} | 33.0 | |
| 60 | | | 60 | 2.72 {0.28} | 36.0 | |
| 65 | | | 65 | 2.51 {0.26} | 39.0 | |
| 70 | | | 70 | 2.33 {0.24} | 42.0 | |
| 75 | | | 75 | 2.18 {0.22} | 45.0 | |
| 80 | | | 80 | 2.04 {0.21} | 48.0 | |
| 90 | | | 90 | 1.82 {0.19} | 54.0 | |
| 100 | | | 100 | 1.63 {0.17} | 60.0 | |
| 110 | | | 110 | 1.49 {0.15} | 66.0 | |
| 120 | | | 120 | 1.36 {0.14} | 72.0 | |
| 125 | | | 125 | 1.31 {0.13} | 75.0 | |
| 150 | | | 150 | 1.09 {0.11} | 90.0 | |
| DSWU17 - 20 | 17 | 10.5 | 20 | 12.26 {1.25} | 12.0 | 147.1 {15.0} |
| 25 | | | 25 | 9.81 {1.00} | 15.0 | |
| 30 | | | 30 | 8.17 {0.83} | 18.0 | |
| 35 | | | 35 | 7.00 {0.71} | 21.0 | |
| 40 | | | 40 | 6.13 {0.63} | 24.0 | |
| 45 | | | 45 | 5.45 {0.56} | 27.0 | |
| 50 | | | 50 | 4.90 {0.50} | 30.0 | |
| 55 | | | 55 | 4.46 {0.45} | 33.0 | |
| 60 | | | 60 | 4.09 {0.42} | 36.0 | |
| 65 | | | 65 | 3.77 {0.38} | 39.0 | |
| 70 | | | 70 | 3.50 {0.36} | 42.0 | |
| 75 | | | 75 | 3.27 {0.33} | 45.0 | |
| 80 | | | 80 | 3.06 {0.31} | 48.0 | |
| 90 | | | 90 | 2.72 {0.28} | 54.0 | |
| 100 | | | 100 | 2.45 {0.25} | 60.0 | |
| 110 | | | 110 | 2.23 {0.23} | 66.0 | |
| 120 | | | 120 | 2.04 {0.21} | 72.0 | |
| 125 | | | 125 | 1.96 {0.20} | 75.0 | |
| 150 | | | 150 | 1.63 {0.17} | 90.0 | |
| 175 | | | 175 | 1.40 {0.14} | 105.0 | |

| Part No. Type D-L | D | d | L | Spring Constant N/mm{kgf/mm} | F =L x 60% Fmm | F =L x 60% Load N{kgf} |
|---|---|---|---|---|---|---|
| DSWU21 - | 21 | 13.5 | 25 | 15.04 {1.53} | 15.0 | 225.6 {23.0} |
| 30 | | | 30 | 12.53 {1.28} | 18.0 | |
| 35 | | | 35 | 10.74 {1.10} | 21.0 | |
| 40 | | | 40 | 9.40 {0.96} | 24.0 | |
| 45 | | | 45 | 8.35 {0.85} | 27.0 | |
| 50 | | | 50 | 7.52 {0.77} | 30.0 | |
| 55 | | | 55 | 6.83 {0.70} | 33.0 | |
| 60 | | | 60 | 6.27 {0.64} | 36.0 | |
| 65 | | | 65 | 5.78 {0.59} | 39.0 | |
| 70 | | | 70 | 5.37 {0.55} | 42.0 | |
| 75 | | | 75 | 5.01 {0.51} | 45.0 | |
| 80 | | | 80 | 4.70 {0.48} | 48.0 | |
| 90 | | | 90 | 4.18 {0.43} | 54.0 | |
| 100 | | | 100 | 3.76 {0.38} | 60.0 | |
| 110 | | | 110 | 3.42 {0.35} | 66.0 | |
| 120 | | | 120 | 3.13 {0.32} | 72.0 | |
| 125 | | | 125 | 3.01 {0.31} | 75.0 | |
| 130 | | | 130 | 2.89 {0.29} | 78.0 | |
| 140 | | | 140 | 2.69 {0.27} | 84.0 | |
| 150 | | | 150 | 2.51 {0.26} | 90.0 | |
| 175 | | | 175 | 2.15 {0.22} | 105.0 | |
| 200 | | | 200 | 1.88 {0.19} | 120.0 | |
| DSWU26 - | 26 | 16.5 | 30 | 16.34 {1.67} | 18.0 | 294.2 {23.0} |
| 35 | | | 35 | 14.01 {1.43} | 21.0 | |
| 40 | | | 40 | 12.26 {1.25} | 24.0 | |
| 45 | | | 45 | 10.90 {1.11} | 27.0 | |
| 50 | | | 50 | 9.81 {1.00} | 30.0 | |
| 55 | | | 55 | 8.92 {0.91} | 33.0 | |
| 60 | | | 60 | 8.17 {0.83} | 36.0 | |
| 65 | | | 65 | 7.54 {0.77} | 39.0 | |
| 70 | | | 70 | 7.00 {0.71} | 42.0 | |
| 75 | | | 75 | 6.54 {0.67} | 45.0 | |
| 80 | | | 80 | 6.13 {0.63} | 48.0 | |
| 90 | | | 90 | 5.45 {0.56} | 54.0 | |
| 100 | | | 100 | 4.90 {0.50} | 60.0 | |
| 110 | | | 110 | 4.46 {0.45} | 66.0 | |
| 120 | | | 120 | 4.09 {0.42} | 72.0 | |
| 125 | | | 125 | 3.92 {0.40} | 75.0 | |
| 130 | | | 130 | 3.77 {0.38} | 78.0 | |
| 140 | | | 140 | 3.50 {0.36} | 84.0 | |
| 150 | | | 150 | 3.27 {0.33} | 90.0 | |
| 175 | | | 175 | 2.80 {0.29} | 105.0 | |
| 200 | | | 200 | 2.45 {0.25} | 120.0 | |
| 225 | | | 225 | 2.18 {0.22} | 135.0 | |
| 250 | | | 250 | 1.96 {0.20} | 150.0 | |
| DSWU31 - | 31 | 21 | 35 | 17.75 {1.81} | 21.0 | 372.7 {38.0} |
| 40 | | | 40 | 15.53 {1.58} | 24.0 | |
| 45 | | | 45 | 13.80 {1.41} | 27.0 | |
| 50 | | | 50 | 12.42 {1.27} | 30.0 | |
| 55 | | | 55 | 11.29 {1.15} | 33.0 | |
| 60 | | | 60 | 10.35 {1.06} | 36.0 | |
| 65 | | | 65 | 9.56 {0.97} | 39.0 | |
| 70 | | | 70 | 8.87 {0.90} | 42.0 | |
| 75 | | | 75 | 8.28 {0.84} | 45.0 | |
| 80 | | | 80 | 7.76 {0.79} | 48.0 | |
| 90 | | | 90 | 6.90 {0.70} | 54.0 | |
| 100 | | | 100 | 6.21 {0.63} | 60.0 | |
| 110 | | | 110 | 5.65 {0.58} | 66.0 | |
| 120 | | | 120 | 5.18 {0.53} | 72.0 | |
| 125 | | | 125 | 4.97 {0.51} | 75.0 | |
| 130 | | | 130 | 4.78 {0.49} | 78.0 | |
| 140 | | | 140 | 4.44 {0.45} | 84.0 | |
| 150 | | | 150 | 4.14 {0.42} | 90.0 | |
| 160 | | | 160 | 3.88 {0.40} | 96.0 | |
| 170 | | | 170 | 3.65 {0.37} | 102.0 | |
| 175 | | | 175 | 3.55 {0.36} | 105.0 | |
| 180 | | | 180 | 3.45 {0.35} | 108.0 | |
| 190 | | | 190 | 3.27 {0.33} | 114.0 | |
| 200 | | | 200 | 3.11 {0.32} | 120.0 | |
| 250 | | | 250 | 2.48 {0.25} | 150.0 | |
| 300 | | | 300 | 2.07 {0.21} | 180.0 | |

| Part No. Type D-L | D | d | L | Spring Constant N/mm{kgf/mm} | F =L x 60% Fmm | F =L x 60% Load N{kgf} |
|---|---|---|---|---|---|---|
| DSWU37 - | 37 | 26 | 40 | 19.20 {1.96} | 24.0 | 460.9 {47} |
| 45 | | | 45 | 17.07 {1.74} | 27.0 | |
| 50 | | | 50 | 15.36 {1.57} | 30.0 | |
| 55 | | | 55 | 13.97 {1.42} | 33.0 | |
| 60 | | | 60 | 12.80 {1.31} | 36.0 | |
| 65 | | | 65 | 11.82 {1.21} | 39.0 | |
| 70 | | | 70 | 10.97 {1.12} | 42.0 | |
| 75 | | | 75 | 10.24 {1.04} | 45.0 | |
| 80 | | | 80 | 9.60 {0.98} | 48.0 | |
| 90 | | | 90 | 8.54 {0.87} | 54.0 | |
| 100 | | | 100 | 7.68 {0.78} | 60.0 | |
| 110 | | | 110 | 6.98 {0.71} | 66.0 | |
| 120 | | | 120 | 6.40 {0.65} | 72.0 | |
| 130 | | | 130 | 5.91 {0.60} | 78.0 | |
| 140 | | | 140 | 5.49 {0.56} | 84.0 | |
| 150 | | | 150 | 5.12 {0.52} | 90.0 | |
| 160 | | | 160 | 4.80 {0.49} | 96.0 | |
| 170 | | | 170 | 4.52 {0.46} | 102.0 | |
| 180 | | | 180 | 4.27 {0.44} | 108.0 | |
| 190 | | | 190 | 4.04 {0.41} | 114.0 | |
| 200 | | | 200 | 3.84 {0.39} | 120.0 | |
| 225 | | | 225 | 3.41 {0.35} | 135.0 | |
| 250 | | | 250 | 3.07 {0.31} | 150.0 | |
| 275 | | | 275 | 2.79 {0.28} | 165.0 | |
| 300 | | | 300 | 2.56 {0.26} | 180.0 | |
| DSWU43 - | 43 | 31 | 50 | 19.61 {2.00} | 30.0 | 588.4 {60} |
| 60 | | | 60 | 16.34 {1.67} | 36.0 | |
| 70 | | | 70 | 14.01 {1.43} | 42.0 | |
| 80 | | | 80 | 12.26 {1.25} | 48.0 | |
| 90 | | | 90 | 10.90 {1.11} | 54.0 | |
| 100 | | | 100 | 9.81 {1.00} | 60.0 | |
| 110 | | | 110 | 8.92 {0.91} | 66.0 | |
| 120 | | | 120 | 8.17 {0.83} | 72.0 | |
| 130 | | | 130 | 7.54 {0.77} | 78.0 | |
| 140 | | | 140 | 7.00 {0.71} | 84.0 | |
| 150 | | | 150 | 6.54 {0.67} | 90.0 | |
| 160 | | | 160 | 6.13 {0.63} | 96.0 | |
| 170 | | | 170 | 5.77 {0.59} | 102.0 | |
| 180 | | | 180 | 5.45 {0.56} | 108.0 | |
| 190 | | | 190 | 5.16 {0.53} | 114.0 | |
| 200 | | | 200 | 4.90 {0.50} | 120.0 | |
| 225 | | | 225 | 4.36 {0.44} | 135.0 | |
| 250 | | | 250 | 3.92 {0.40} | 150.0 | |
| 275 | | | 275 | 3.57 {0.36} | 165.0 | |
| 300 | | | 300 | 3.27 {0.33} | 180.0 | |

| | |
|---|---|
| Alteration | Paint peeling  No painting |
| Code | NT |
| Spec. | Peel the coating by shot peening.<br>◖ Since the springs which have undergone the painting peeling are easy to rust, be careful in handling. A rusted spring could cause early breakage.<br>◖ Compared to painted springs, there may be some dispersions in terms of load, etc. depending on the lot. |

**M Equivalent of SWOSC−V (Steel Wire Oil Temper Silicon for Valve)**

**◖ Load calculation method: Load=Spring constant×Deflection**

(SI units) N=N/mm×Fmm

kgf=kgf/mm×Fmm

(kgf=N×0.101972)

**ORDERING GUIDE**

NT (NT) Part Number DSWU 31 - 50

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