

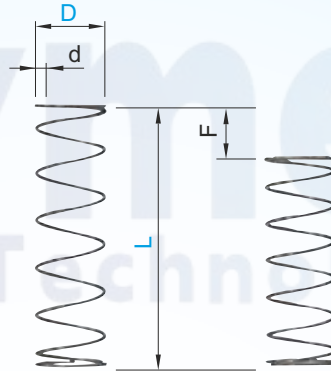
HEAT PROOF WIRE SPRINGS

DWFH (60% DEFLECTION) ● Heat resistant up to 200°C



Spring constant

| D | Type | DWFH | DWLH | DWMH | DWHH |
|-------|------|-----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 4 | | | | 2.0 (0.2) | 0.9 (0.3) |
| 5 | | | | | |
| 6 | | | | | |
| 8 | | N/mm 0.5 (kgf/mm) (0.05) | N/mm 1.0 (kgf/mm) (0.1) | N/mm 2.9 (kgf/mm) (0.3) | N/mm 5.9 (kgf/mm) (0.6) |
| 10 | | | | | |
| 12 | | | | | |
| 13 | | | | | N/mm 9.8 (kgf/mm) (1.0) |
| 16 | | | | | |
| 18 | | 1.0 (0.1) | 2.9 (0.3) | 4.9 (0.5) | 14.7 (1.5) |
| Fmax. | | F=Lx60% | F=Lx50% | F=Lx40% | F=Lx35% |



Spring constant $\pm 10\%$
 Diameter D $\varnothing 10$ or less -0.5mm
 $\varnothing 13$ or more $+0.8\text{mm}$
 Free length L 50 or less $\pm 1\text{mm}$
 55 or more $\pm 1.5\text{mm}$

● DWFH: $F_{\text{max}}(\text{Allowable Deflection}) = L \times 60\%$

● F(Allowable deflection) is due to the measurement at normal temperature (40°C)
 Maximum allowable deflection at high temperature (150°/200°C).



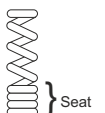
| Part No. Type D-L | d | Height Solid | F max. | Load N(kgf) max. |
|----------------------|------|-----------------|-----------|------------------------|
| DWFH4 - 5* | 0.29 | 1.8 | 3 | 1.5 (0.15) |
| 10* | 0.35 | 3.2 | 6 | 2.9 (0.3) |
| 15* | 0.35 | 3.2 | 9 | 4.4 (0.45) |
| 20* | 0.4 | 5.2 | 12 | 5.9 (0.6) |
| 25* | 0.4 | 6 | 15 | 7.4 (0.75) |
| 30* | 0.4 | 6.8 | 18 | 8.8 (0.9) |
| 35* | 0.45 | 10.4 | 21 | 10.3 (1.05) |
| 40* | 0.45 | 11.3 | 24 | 11.8 (1.2) |
| DWFH5 - 5* | 0.3 | 1.2 | 3 | 1.5 (0.15) |
| 10* | 0.4 | 3.2 | 6 | 2.9 (0.3) |
| 15* | 0.4 | 3.2 | 9 | 4.4 (0.45) |
| 20 | 0.45 | 5.5 | 12 | 5.9 (0.6) |
| 25 | 0.45 | 6.3 | 15 | 7.4 (0.75) |
| 30 | 0.5 | 8 | 18 | 8.8 (0.9) |
| 35 | 0.5 | 9.5 | 21 | 10.3 (1.05) |
| 40 | 0.5 | 9.5 | 24 | 11.8 (1.2) |
| 45 | 0.55 | 13.0 | 27 | 13.2 (1.35) |
| 50 | 0.55 | 13.7 | 30 | 14.7 (1.5) |
| DWFH6 - 5* | 0.35 | 1.4 | 3 | 1.5 (0.15) |
| 10* | 0.45 | 3.2 | 6 | 2.9 (0.3) |
| 15* | 0.45 | 3.2 | 9 | 4.4 (0.45) |
| 20 | 0.5 | 5.5 | 12 | 5.9 (0.6) |
| 25 | 0.5 | 5.5 | 15 | 7.4 (0.75) |
| 30 | 0.6 | 10 | 18 | 8.8 (0.9) |
| 35 | 0.6 | 10 | 21 | 10.3 (1.05) |
| 40 | 0.6 | 11 | 24 | 11.8 (1.2) |
| 45 | 0.6 | 11.5 | 27 | 13.2 (1.35) |
| 50 | 0.65 | 15 | 30 | 14.7 (1.5) |
| 55 | 0.65 | 17 | 33 | 16.2 (1.65) |
| 60 | 0.65 | 17 | 36 | 17.7 (1.8) |
| 65 | 0.7 | 23 | 39 | 19.1 (1.95) |
| 70 | 0.7 | 23 | 42 | 20.6 (2.1) |
| 80 | 0.7 | 24 | 48 | 23.5 (2.4) |

| Part No. Type D-L | d | Height Solid | F max. | Load N(kgf) max. |
|----------------------|------|-----------------|-----------|------------------------|
| DWFH8 - 10 | 0.5 | 2.8 | 6 | 2.9 (0.3) |
| 15 | 0.5 | 3 | 9 | 4.4 (0.45) |
| 20 | 0.6 | 5.3 | 12 | 5.9 (0.6) |
| 25 | 0.6 | 5.3 | 15 | 7.4 (0.75) |
| 30 | 0.65 | 7.3 | 18 | 8.8 (0.9) |
| 35 | 0.65 | 7.3 | 21 | 10.3 (1.05) |
| 40 | 0.7 | 10 | 24 | 11.8 (1.2) |
| 45 | 0.7 | 10 | 27 | 13.2 (1.35) |
| 50 | 0.7 | 10.5 | 30 | 14.7 (1.5) |
| 55 | 0.8 | 18 | 33 | 16.2 (1.65) |
| 60 | 0.8 | 18 | 36 | 17.7 (1.8) |
| 65 | 0.8 | 20 | 39 | 19.1 (1.95) |
| 70 | 0.8 | 20 | 42 | 20.6 (2.1) |
| 80 | 0.8 | 21 | 48 | 23.5 (2.4) |
| DWFH10 - 10 | 0.6 | 3 | 6 | 2.9 (0.3) |
| 15 | 0.6 | 3.2 | 9 | 4.4 (0.45) |
| 20 | 0.7 | 5.3 | 12 | 5.9 (0.6) |
| 25 | 0.7 | 5.3 | 15 | 7.4 (0.75) |
| 30 | 0.7 | 5.6 | 18 | 8.8 (0.9) |
| 35 | 0.8 | 10 | 21 | 10.3 (1.05) |
| 40 | 0.8 | 10 | 24 | 11.8 (1.2) |
| 45 | 0.8 | 10.5 | 27 | 13.2 (1.35) |
| 50 | 0.8 | 10.5 | 30 | 14.7 (1.5) |
| 55 | 0.8 | 11 | 33 | 16.2 (1.65) |
| 60 | 0.9 | 17.6 | 36 | 17.7 (1.8) |
| 65 | 0.9 | 18 | 39 | 19.1 (1.95) |
| 70 | 0.9 | 18 | 42 | 20.6 (2.1) |
| 80 | 0.9 | 19 | 48 | 23.5 (2.4) |
| DWFH13 - 15 | 0.7 | 3.5 | 9 | 4.4 (0.45) |
| 20 | 0.8 | 5 | 12 | 5.9 (0.6) |
| 25 | 0.8 | 5 | 15 | 7.4 (0.75) |
| 30 | 0.8 | 5 | 18 | 8.8 (0.9) |
| 35 | 0.9 | 7.7 | 21 | 10.3 (1.05) |
| 40 | 0.9 | 7.7 | 24 | 11.8 (1.2) |
| 45 | 0.9 | 8.6 | 27 | 13.2 (1.35) |
| 50 | 0.9 | 8.6 | 30 | 14.7 (1.5) |
| 55 | 1.0 | 12.5 | 33 | 16.2 (1.65) |
| 60 | 1.0 | 13.5 | 36 | 17.7 (1.8) |
| 65 | 1.0 | 13.5 | 39 | 19.1 (1.95) |
| 70 | 1.1 | 20 | 42 | 20.6 (2.1) |
| 80 | 1.1 | 20 | 48 | 23.5 (2.4) |
| 90 | 1.1 | 21 | 54 | 26.5 (2.7) |

| Part No. Type D-L | d | Height Solid | F max. | Load N(kgf) max. |
|----------------------|-----|-----------------|-----------|------------------------|
| DWFH16 - 15 | 0.8 | 3.6 | 9 | 4.4 (0.45) |
| 20 | 0.9 | 5.3 | 12 | 5.9 (0.6) |
| 25 | 0.9 | 5.3 | 15 | 7.4 (0.75) |
| 30 | 1.0 | 8 | 18 | 8.8 (0.9) |
| 35 | 1.0 | 8 | 21 | 10.3 (1.05) |
| 40 | 1.0 | 9 | 24 | 11.8 (1.2) |
| 45 | 1.0 | 9 | 27 | 13.2 (1.35) |
| 50 | 1.0 | 9 | 30 | 14.7 (1.5) |
| 55 | 1.0 | 9 | 33 | 16.2 (1.65) |
| 60 | 1.1 | 12 | 36 | 17.7 (1.8) |
| 65 | 1.1 | 12 | 39 | 19.1 (1.95) |
| 70 | 1.2 | 17 | 42 | 20.6 (2.1) |
| 80 | 1.2 | 17 | 48 | 23.5 (2.4) |
| 90 | 1.2 | 17 | 54 | 26.5 (2.7) |
| DWFH18 - 20 | 1.0 | 5 | 12 | 11.8 (1.2) |
| 25 | 1.1 | 5.5 | 15 | 14.7 (1.5) |
| 30 | 1.1 | 5.5 | 18 | 17.7 (1.8) |
| 35 | 1.2 | 8 | 21 | 20.6 (2.1) |
| 40 | 1.2 | 8 | 24 | 23.5 (2.4) |
| 45 | 1.2 | 8 | 27 | 26.5 (2.7) |
| 50 | 1.4 | 14 | 30 | 29.4 (3.0) |
| 55 | 1.4 | 14 | 33 | 32.4 (3.3) |
| 60* | 1.4 | 14 | 36 | 35.3 (3.6) |
| 65 | 1.4 | 14 | 39 | 38.2 (3.9) |
| 70 | 1.5 | 20 | 42 | 41.2 (4.2) |
| 80 | 1.5 | 20 | 48 | 47.1 (4.8) |
| 90 | 1.6 | 26 | 54 | 53.0 (5.4) |
| 100 | 1.6 | 26 | 60 | 58.8 (6.0) |

● N (load) = N/mm (spring constant) × Fmm (deflection)
 Load (kgf) = Load N × 0.101972

- No grinding on both ends of springs marked with*
- The solid height values are for reference only. There may be some dispersions depending on the lot.
- Times used: 1 million
- Instructions and notes for coil springs
- Coil springs marked with ● have spring seat(s) on one end or both ends in order to reduce excessive stress or potential breakage when deflecting.
 (The seat becomes 4 rolling extent from 0.5)
 Solid height/spring constant values are the same as those without spring seats.



ORDERING GUIDE



DWFH 13 - 60

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