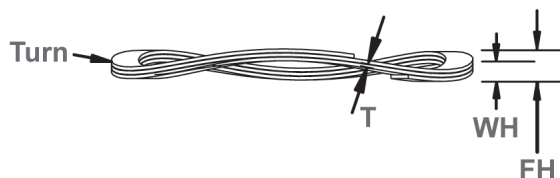
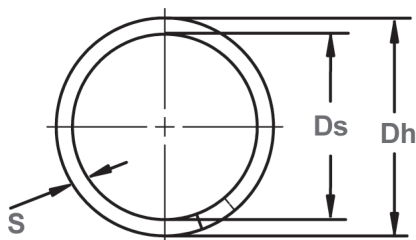




# MWN WAVE SPRINGS

## Wave Springs, Nested, Metric

Ideal for short deflection applications with medium to high forces. Designed for a wide range of bore and shaft diameters. Offered in two-turn "A" and three-turn "B" configurations.



| Wave Spring No. | Operates In Bore Diameter | Shaft Diameter Clearance | Load @ Work Height (N) | Work Height | Free Height* | No. Of Waves | No. Of Turns | Wire Thickness | Section | Spring Rate Ref. (N/mm) |
|-----------------|---------------------------|--------------------------|------------------------|-------------|--------------|--------------|--------------|----------------|---------|-------------------------|
|                 | Dh                        | Ds                       |                        | WH          | FH           |              |              | T              | S       |                         |
| MWN-63 A        | 16                        | 11.46                    | 89.0                   | 1.83        | 2.46         | 3            | 2            | 0.28           | 1.52    | 140                     |
| MWN-63 B        | 16                        | 11.46                    | 133.5                  | 2.08        | 3.15         | 3            | 3            | 0.28           | 1.52    | 125                     |
| MWN-75 A        | 19                        | 13.36                    | 106.8                  | 1.83        | 2.77         | 3            | 2            | 0.28           | 1.98    | 114                     |
| MWN-75 B        | 19                        | 13.36                    | 160.2                  | 2.08        | 3.18         | 3            | 3            | 0.28           | 1.98    | 146                     |
| MWN-87 A        | 22                        | 15.75                    | 124.6                  | 1.88        | 3.14         | 3            | 2            | 0.30           | 2.39    | 99                      |
| MWN-87 B        | 22                        | 15.75                    | 186.9                  | 2.18        | 3.56         | 3            | 3            | 0.30           | 2.39    | 136                     |
| MWN-95 A        | 24                        | 17.02                    | 133.5                  | 1.88        | 3.56         | 3            | 2            | 0.30           | 2.39    | 80                      |
| MWN-95 B        | 24                        | 17.02                    | 200.3                  | 2.18        | 3.86         | 3            | 3            | 0.30           | 2.39    | 119                     |
| MWN-102 A       | 26                        | 18.14                    | 142.4                  | 2.34        | 3.37         | 3            | 2            | 0.36           | 3.18    | 138                     |
| MWN-102 B       | 26                        | 18.14                    | 213.6                  | 2.69        | 3.73         | 3            | 3            | 0.36           | 3.18    | 205                     |
| MWN-110 A       | 28                        | 20.07                    | 151.3                  | 2.34        | 3.68         | 3            | 2            | 0.36           | 3.18    | 113                     |
| MWN-110 B       | 28                        | 20.07                    | 227.0                  | 2.69        | 4.04         | 3            | 3            | 0.36           | 3.18    | 168                     |
| MWN-118 A       | 30                        | 21.87                    | 169.1                  | 2.34        | 4.24         | 3            | 2            | 0.36           | 3.18    | 89                      |
| MWN-118 B       | 30                        | 21.87                    | 253.7                  | 2.69        | 4.78         | 3            | 3            | 0.36           | 3.18    | 121                     |
| MWN-126 A       | 32                        | 23.67                    | 178.0                  | 2.39        | 4.07         | 3            | 2            | 0.41           | 3.38    | 106                     |
| MWN-126 B       | 32                        | 23.67                    | 267.0                  | 2.79        | 4.48         | 3            | 3            | 0.41           | 3.38    | 158                     |
| MWN-138 A       | 35                        | 26.42                    | 195.8                  | 2.39        | 4.94         | 3            | 2            | 0.41           | 3.38    | 77                      |
| MWN-138 B       | 35                        | 26.42                    | 293.7                  | 2.79        | 5.35         | 3            | 3            | 0.41           | 3.38    | 115                     |
| MWN-146 A       | 37                        | 28.65                    | 204.7                  | 2.44        | 4.72         | 3            | 2            | 0.46           | 3.38    | 90                      |
| MWN-146 B       | 37                        | 28.65                    | 307.1                  | 2.90        | 5.18         | 3            | 3            | 0.46           | 3.38    | 135                     |
| MWN-158 A       | 40                        | 31.01                    | 222.5                  | 2.44        | 5.70         | 3            | 2            | 0.46           | 3.38    | 68                      |
| MWN-158 B       | 40                        | 31.01                    | 333.8                  | 2.90        | 6.15         | 3            | 3            | 0.46           | 3.38    | 103                     |
| MWN-165 A       | 42                        | 33.50                    | 231.4                  | 2.44        | 3.71         | 4            | 2            | 0.46           | 3.38    | 182                     |
| MWN-165 B       | 42                        | 33.50                    | 347.1                  | 2.90        | 4.17         | 4            | 3            | 0.46           | 3.38    | 273                     |
| MWN-185 A       | 47                        | 38.18                    | 258.1                  | 2.44        | 4.52         | 4            | 2            | 0.46           | 3.38    | 124                     |
| MWN-185 B       | 47                        | 38.18                    | 387.2                  | 2.90        | 4.98         | 4            | 3            | 0.46           | 3.38    | 186                     |

All dimensions in millimeters unless otherwise specified.

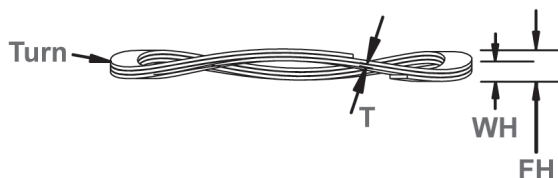
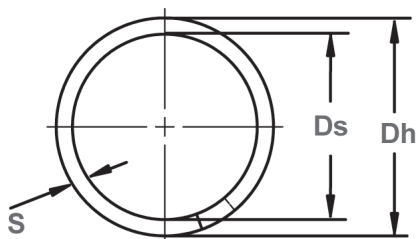
Material codes: ST = carbon steel. SQ = 17-7 PH/C stainless steel. Special alloys available upon request.

\* To measure free height (a reference dimension), a minimal load must be applied to ensure all wave crests are simultaneously in contact.

## Wave Springs, Nested, Inch

Ideal for short deflection applications with medium to high forces. Designed for a wide range of bore and shaft diameters. Offered in two-turn "A" and three-turn "B" configurations.

# WAVE SPRINGS MWN



| Wave Spring No.  | Operates In Bore Diameter | Shaft Diameter Clearance | Load @ Work Height (N) | Work Height | Free Height* | No. Of Waves | No. Of Turns | Wire Thickness | Section | Spring Rate Ref. (N/mm) |
|------------------|---------------------------|--------------------------|------------------------|-------------|--------------|--------------|--------------|----------------|---------|-------------------------|
|                  | Dh                        | Ds                       |                        | WH          | FH           |              |              | T              | S       |                         |
| <b>MWN-205 A</b> | 52                        | 42.37                    | 284.8                  | 2.97        | 4.15         | 4            | 2            | 0.61           | 3.76    | 241                     |
| <b>MWN-205 B</b> | 52                        | 42.37                    | 427.2                  | 3.58        | 4.76         | 4            | 3            | 0.61           | 3.76    | 362                     |
| <b>MWN-217 A</b> | 55                        | 45.31                    | 302.6                  | 2.97        | 4.48         | 4            | 2            | 0.61           | 3.76    | 200                     |
| <b>MWN-217 B</b> | 55                        | 45.31                    | 453.9                  | 3.58        | 5.09         | 4            | 3            | 0.61           | 3.76    | 301                     |
| <b>MWN-244 A</b> | 62                        | 50.65                    | 338.2                  | 2.97        | 4.93         | 4            | 2            | 0.61           | 4.52    | 173                     |
| <b>MWN-244 B</b> | 62                        | 50.65                    | 507.3                  | 3.58        | 5.54         | 4            | 3            | 0.61           | 4.52    | 259                     |
| <b>MWN-268 A</b> | 68                        | 56.16                    | 373.8                  | 3.53        | 4.94         | 4            | 2            | 0.76           | 4.78    | 265                     |
| <b>MWN-268 B</b> | 68                        | 56.16                    | 560.7                  | 4.29        | 5.70         | 4            | 3            | 0.76           | 4.78    | 398                     |
| <b>MWN-276 A</b> | 70                        | 58.14                    | 382.7                  | 3.53        | 5.12         | 4            | 2            | 0.76           | 4.78    | 241                     |
| <b>MWN-276 B</b> | 70                        | 58.14                    | 574.1                  | 4.29        | 5.88         | 4            | 3            | 0.76           | 4.78    | 361                     |
| <b>MWN-284 A</b> | 72                        | 60.07                    | 391.6                  | 3.53        | 5.32         | 4            | 2            | 0.76           | 4.78    | 219                     |
| <b>MWN-284 B</b> | 72                        | 60.07                    | 587.4                  | 4.29        | 6.08         | 4            | 3            | 0.76           | 4.78    | 328                     |
| <b>MWN-295 A</b> | 75                        | 62.97                    | 409.4                  | 3.53        | 5.68         | 4            | 2            | 0.76           | 4.78    | 190                     |
| <b>MWN-295 B</b> | 75                        | 62.97                    | 614.1                  | 4.29        | 6.44         | 4            | 3            | 0.76           | 4.78    | 286                     |
| <b>MWN-315 A</b> | 80                        | 67.49                    | 436.1                  | 3.53        | 6.37         | 4            | 2            | 0.76           | 4.78    | 154                     |
| <b>MWN-315 B</b> | 80                        | 67.49                    | 654.2                  | 4.29        | 7.13         | 4            | 3            | 0.76           | 4.78    | 230                     |
| <b>MWN-335 A</b> | 85                        | 70.26                    | 462.8                  | 3.53        | 6.29         | 4            | 2            | 0.76           | 5.92    | 168                     |
| <b>MWN-335 B</b> | 85                        | 70.26                    | 694.2                  | 4.29        | 7.05         | 4            | 3            | 0.76           | 5.92    | 252                     |
| <b>MWN-354 A</b> | 90                        | 74.98                    | 498.4                  | 3.53        | 7.13         | 4            | 2            | 0.76           | 5.92    | 138                     |
| <b>MWN-354 B</b> | 90                        | 74.98                    | 747.6                  | 4.29        | 7.89         | 4            | 3            | 0.76           | 5.92    | 208                     |
| <b>MWN-374 A</b> | 95                        | 79.65                    | 525.1                  | 3.53        | 8.08         | 4            | 2            | 0.76           | 5.92    | 115                     |
| <b>MWN-374 B</b> | 95                        | 79.65                    | 787.7                  | 4.29        | 8.84         | 4            | 3            | 0.76           | 5.92    | 173                     |
| <b>MWN-394 A</b> | 100                       | 85.42                    | 551.8                  | 3.53        | 5.27         | 5            | 2            | 0.76           | 5.92    | 317                     |
| <b>MWN-394 B</b> | 100                       | 85.42                    | 827.7                  | 4.29        | 6.03         | 5            | 3            | 0.76           | 5.92    | 476                     |

All dimensions in millimeters unless otherwise specified.

Material codes: ST = carbon steel, SQ = 17-7 PH/C stainless steel. Special alloys available upon request.

\* To measure free height (a reference dimension), a minimal load must be applied to ensure all wave crests are simultaneously in contact.