

INTRODUCING SMALLEY'S NEW STANDARD SERIES  
**NESTED SPIRAWAVE® WAVE SPRINGS**



**SMALLEY**

THE ENGINEER'S CHOICE®

# WHAT IS A NESTED SPIRAWAVE® SPRING?

Nested Spirawave springs are flat wire wave springs with multiple turns, coiled in parallel to produce higher forces.

## BENEFITS



Two to three times the force of a standard single-turn wave spring



Can replace stacks of single-turn wave springs

- Eliminates misalignment and inconsistent loading
- Lower cost over stacks
- Quick, simple assembly and installation



Sturdy and tangle-resistant design for automated handling



Fast delivery on standard carbon and stainless parts from .500 to 4" or 16 to 100mm

- Thousands available from stock for next day shipping
- Three week lead time on standard parts in non-stock quantities

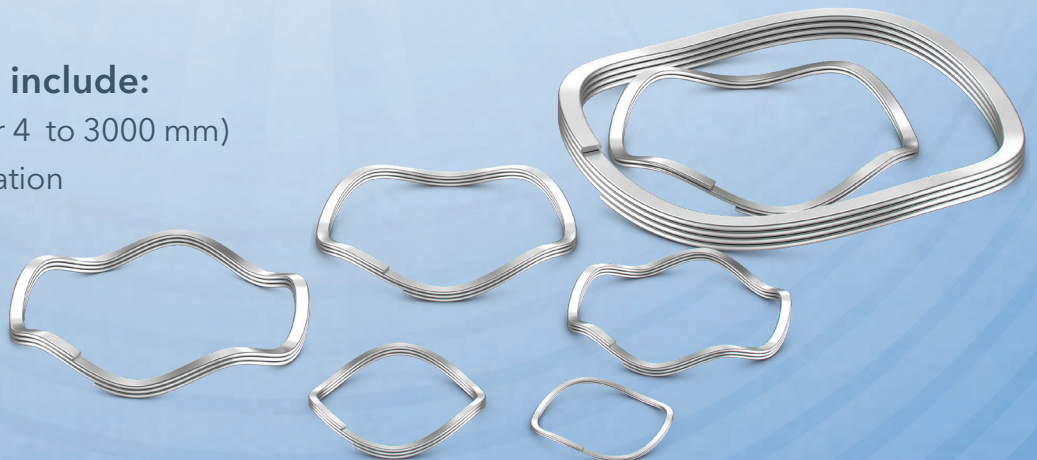
## CUSTOMS

At Smalley, customs are standard. Smalley Engineers have been designing custom Nested Spirawave springs for over 30 years, so if one of our new standards doesn't fit your application, we'll make sure you get one that does.

Smalley's No Tooling Cost™ manufacturing process makes producing customs economical and efficient. Our edgewinding process coils parts on edge, which requires no special tooling. Custom designs and prototypes can be manufactured quickly and efficiently, saving time and money.

### Customizable features include:

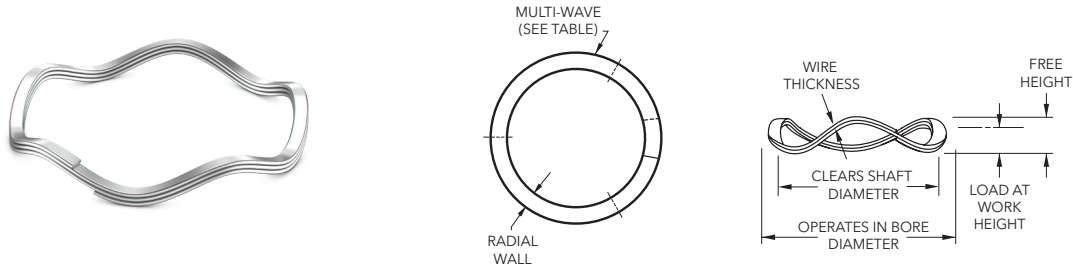
- Diameter (.157 to 120" or 4 to 3000 mm)
- Bent ends to prevent rotation
- Number of turns
- Material
- Finish
- Shim ends
- Wire thickness
- Load capacity





# NSSB Series

## Metric Nested Spirawave® Wave Springs



Standard Nested Spirawave Wave Springs are flat wire wave springs with multiple turns, coiled in parallel. They produce high forces in applications with tight radial and axial space. They are specified to replace stacked single-turn wave springs, eliminating misalignment issues and allowing for quicker assembly.

**Product Dimensions:** All dimensions in millimeters unless otherwise specified.

| Smalley Part Number |                              | Operates in Bore Diameter (mm) | Clears Shaft Diameter (mm) | Load at Work Height (N) | Work Height (mm) | Load at Free Height (N) | Free Height <sup>1</sup> (mm) | Number of Waves | Number of Turns | Wire Thickness (mm) | Radial Wall (mm) | Spring Rate <sup>1,2</sup> (N/mm) |
|---------------------|------------------------------|--------------------------------|----------------------------|-------------------------|------------------|-------------------------|-------------------------------|-----------------|-----------------|---------------------|------------------|-----------------------------------|
| Carbon Steel        | Add Suffix for<br>17-7 PH SS |                                |                            |                         |                  |                         |                               |                 |                 |                     |                  |                                   |
| NSSB-0063-L2        | -S17                         | 16.00                          | 11.46                      | 89.0                    | 1.83             | 4.5                     | 2.90                          | 3               | 2               | 0.25                | 1.47             | 83                                |
| NSSB-0063-L3        | -S17                         | 16.00                          | 11.46                      | 133.5                   | 2.08             | 4.5                     | 3.15                          | 3               | 3               | 0.25                | 1.47             | 125                               |
| NSSB-0075-L2        | -S17                         | 19.00                          | 13.36                      | 106.8                   | 1.83             | 4.5                     | 3.31                          | 3               | 2               | 0.25                | 1.98             | 72                                |
| NSSB-0075-L3        | -S17                         | 19.00                          | 13.36                      | 160.2                   | 2.08             | 4.5                     | 3.57                          | 3               | 3               | 0.25                | 1.98             | 108                               |
| NSSB-0087-L2        | -S17                         | 22.00                          | 15.75                      | 124.6                   | 1.88             | 4.5                     | 3.14                          | 3               | 2               | 0.30                | 2.39             | 99                                |
| NSSB-0087-L3        | -S17                         | 22.00                          | 15.75                      | 186.9                   | 2.18             | 4.5                     | 3.44                          | 3               | 3               | 0.30                | 2.39             | 148                               |
| NSSB-0095-L2        | -S17                         | 24.00                          | 17.02                      | 133.5                   | 1.88             | 4.5                     | 3.73                          | 3               | 2               | 0.30                | 2.39             | 72                                |
| NSSB-0095-L3        | -S17                         | 24.00                          | 17.02                      | 200.3                   | 2.18             | 4.5                     | 4.03                          | 3               | 3               | 0.30                | 2.39             | 108                               |
| NSSB-0102-L2        | -S17                         | 26.00                          | 18.14                      | 142.4                   | 2.34             | 4.5                     | 3.37                          | 3               | 2               | 0.36                | 3.18             | 137                               |
| NSSB-0102-L3        | -S17                         | 26.00                          | 18.14                      | 213.6                   | 2.69             | 4.5                     | 3.73                          | 3               | 3               | 0.36                | 3.18             | 206                               |
| NSSB-0110-L2        | -S17                         | 28.00                          | 20.07                      | 151.3                   | 2.34             | 4.5                     | 3.79                          | 3               | 2               | 0.36                | 3.18             | 104                               |
| NSSB-0110-L3        | -S17                         | 28.00                          | 20.07                      | 227.0                   | 2.69             | 4.5                     | 4.14                          | 3               | 3               | 0.36                | 3.18             | 156                               |
| NSSB-0118-L2        | -S17                         | 30.00                          | 21.87                      | 169.1                   | 2.34             | 4.5                     | 4.42                          | 3               | 2               | 0.36                | 3.18             | 81                                |
| NSSB-0118-L3        | -S17                         | 30.00                          | 21.87                      | 253.7                   | 2.69             | 4.5                     | 4.78                          | 3               | 3               | 0.36                | 3.18             | 122                               |
| NSSB-0126-L2        | -S17                         | 32.00                          | 23.67                      | 178.0                   | 2.39             | 4.5                     | 4.07                          | 3               | 2               | 0.41                | 3.38             | 106                               |
| NSSB-0126-L3        | -S17                         | 32.00                          | 23.67                      | 267.0                   | 2.79             | 4.5                     | 4.48                          | 3               | 3               | 0.41                | 3.38             | 159                               |
| NSSB-0138-L2        | -S17                         | 35.00                          | 26.42                      | 195.8                   | 2.39             | 4.5                     | 4.94                          | 3               | 2               | 0.41                | 3.38             | 77                                |
| NSSB-0138-L3        | -S17                         | 35.00                          | 26.42                      | 293.7                   | 2.79             | 4.5                     | 5.35                          | 3               | 3               | 0.41                | 3.38             | 115                               |
| NSSB-0146-L2        | -S17                         | 37.00                          | 28.65                      | 204.7                   | 2.44             | 4.5                     | 4.72                          | 3               | 2               | 0.46                | 3.38             | 90                                |
| NSSB-0146-L3        | -S17                         | 37.00                          | 28.65                      | 307.1                   | 2.90             | 4.5                     | 5.18                          | 3               | 3               | 0.46                | 3.38             | 135                               |
| NSSB-0158-L2        | -S17                         | 40.00                          | 31.01                      | 222.5                   | 2.44             | 4.5                     | 5.70                          | 3               | 2               | 0.46                | 3.38             | 68                                |
| NSSB-0158-L3        | -S17                         | 40.00                          | 31.01                      | 333.8                   | 2.90             | 4.5                     | 6.15                          | 3               | 3               | 0.46                | 3.38             | 102                               |
| NSSB-0165-L2        | -S17                         | 42.00                          | 33.50                      | 231.4                   | 2.44             | 4.5                     | 3.71                          | 4               | 2               | 0.46                | 3.38             | 182                               |
| NSSB-0165-L3        | -S17                         | 42.00                          | 33.50                      | 347.1                   | 2.90             | 4.5                     | 4.17                          | 4               | 3               | 0.46                | 3.38             | 273                               |
| NSSB-0185-L2        | -S17                         | 47.00                          | 38.18                      | 258.1                   | 2.44             | 4.5                     | 4.52                          | 4               | 2               | 0.46                | 3.38             | 124                               |
| NSSB-0185-L3        | -S17                         | 47.00                          | 38.18                      | 387.2                   | 2.90             | 4.5                     | 4.98                          | 4               | 3               | 0.46                | 3.38             | 186                               |
| NSSB-0205-L2        | -S17                         | 52.00                          | 42.37                      | 284.8                   | 2.97             | 4.5                     | 4.15                          | 4               | 2               | 0.61                | 3.76             | 242                               |
| NSSB-0205-L3        | -S17                         | 52.00                          | 42.37                      | 427.2                   | 3.58             | 4.5                     | 4.76                          | 4               | 3               | 0.61                | 3.76             | 363                               |
| NSSB-0217-L2        | -S17                         | 55.00                          | 45.31                      | 302.6                   | 2.97             | 4.5                     | 4.48                          | 4               | 2               | 0.61                | 3.76             | 200                               |
| NSSB-0217-L3        | -S17                         | 55.00                          | 45.31                      | 453.9                   | 3.58             | 4.5                     | 5.09                          | 4               | 3               | 0.61                | 3.76             | 300                               |
| NSSB-0244-L2        | -S17                         | 62.00                          | 50.65                      | 338.2                   | 2.97             | 4.5                     | 4.93                          | 4               | 2               | 0.61                | 4.52             | 172                               |
| NSSB-0244-L3        | -S17                         | 62.00                          | 50.65                      | 507.3                   | 3.58             | 4.5                     | 5.54                          | 4               | 3               | 0.61                | 4.52             | 259                               |
| NSSB-0268-L2        | -S17                         | 68.00                          | 56.16                      | 373.8                   | 3.53             | 4.5                     | 4.94                          | 4               | 2               | 0.76                | 4.78             | 265                               |
| NSSB-0268-L3        | -S17                         | 68.00                          | 56.16                      | 560.7                   | 4.29             | 4.5                     | 5.70                          | 4               | 3               | 0.76                | 4.78             | 398                               |
| NSSB-0276-L2        | -S17                         | 70.00                          | 58.14                      | 382.7                   | 3.53             | 4.5                     | 5.12                          | 4               | 2               | 0.76                | 4.78             | 241                               |
| NSSB-0276-L3        | -S17                         | 70.00                          | 58.14                      | 574.1                   | 4.29             | 4.5                     | 5.88                          | 4               | 3               | 0.76                | 4.78             | 361                               |
| NSSB-0284-L2        | -S17                         | 72.00                          | 60.07                      | 391.6                   | 3.53             | 4.5                     | 5.32                          | 4               | 2               | 0.76                | 4.78             | 219                               |
| NSSB-0284-L3        | -S17                         | 72.00                          | 60.07                      | 587.4                   | 4.29             | 4.5                     | 6.08                          | 4               | 3               | 0.76                | 4.78             | 328                               |
| NSSB-0295-L2        | -S17                         | 75.00                          | 62.97                      | 409.4                   | 3.53             | 4.5                     | 5.68                          | 4               | 2               | 0.76                | 4.78             | 191                               |
| NSSB-0295-L3        | -S17                         | 75.00                          | 62.97                      | 614.1                   | 4.29             | 4.5                     | 6.44                          | 4               | 3               | 0.76                | 4.78             | 286                               |
| NSSB-0315-L2        | -S17                         | 80.00                          | 67.49                      | 436.1                   | 3.53             | 4.5                     | 6.37                          | 4               | 2               | 0.76                | 4.78             | 154                               |
| NSSB-0315-L3        | -S17                         | 80.00                          | 67.49                      | 654.2                   | 4.29             | 4.5                     | 7.13                          | 4               | 3               | 0.76                | 4.78             | 231                               |
| NSSB-0335-L2        | -S17                         | 85.00                          | 70.26                      | 462.8                   | 3.53             | 4.5                     | 6.29                          | 4               | 2               | 0.76                | 5.92             | 168                               |
| NSSB-0335-L3        | -S17                         | 85.00                          | 70.26                      | 694.2                   | 4.29             | 4.5                     | 7.05                          | 4               | 3               | 0.76                | 5.92             | 252                               |
| NSSB-0354-L2        | -S17                         | 90.00                          | 74.98                      | 498.4                   | 3.53             | 4.5                     | 7.13                          | 4               | 2               | 0.76                | 5.92             | 138                               |
| NSSB-0354-L3        | -S17                         | 90.00                          | 74.98                      | 747.6                   | 4.29             | 4.5                     | 7.89                          | 4               | 3               | 0.76                | 5.92             | 208                               |
| NSSB-0374-L2        | -S17                         | 95.00                          | 79.65                      | 525.1                   | 3.53             | 4.5                     | 8.08                          | 4               | 2               | 0.76                | 5.92             | 115                               |
| NSSB-0374-L3        | -S17                         | 95.00                          | 79.65                      | 787.7                   | 4.29             | 4.5                     | 8.84                          | 4               | 3               | 0.76                | 5.92             | 173                               |
| NSSB-0394-L2        | -S17                         | 100.00                         | 85.42                      | 551.8                   | 3.53             | 23.0                    | 5.27                          | 5               | 2               | 0.76                | 5.92             | 318                               |
| NSSB-0394-L3        | -S17                         | 100.00                         | 85.42                      | 827.7                   | 4.29             | 23.0                    | 6.03                          | 5               | 3               | 0.76                | 5.92             | 477                               |

<sup>1</sup>Reference dimension.

<sup>2</sup>Theoretical dimension; measured in N/mm.

# NSSR Series

## Imperial Nested Spirawave® Wave Springs

**Product Dimensions:** All dimensions in inches unless otherwise specified.

| Smalley Part Number |                              | Operates in Bore Diameter (in) | Clears Shaft Diameter (in) | Load at Work Height (lb) | Work Height (in) | Load at Free Height (lb) | Free Height <sup>1</sup> (in) | Number of Waves | Number of Turns | Wire Thickness (in) | Radial Wall (in) | Spring Rate <sup>1,2</sup> (lb/in) |
|---------------------|------------------------------|--------------------------------|----------------------------|--------------------------|------------------|--------------------------|-------------------------------|-----------------|-----------------|---------------------|------------------|------------------------------------|
| Carbon Steel        | Add Suffix for<br>17-7 PH SS |                                |                            |                          |                  |                          |                               |                 |                 |                     |                  |                                    |
| NSSR-0050-L2        | -S17                         | 0.500                          | 0.355                      | 14.0                     | 0.058            | 1.0                      | 0.103                         | 3               | 2               | 0.008               | 0.040            | 314                                |
| NSSR-0050-L3        | -S17                         | 0.500                          | 0.355                      | 21.5                     | 0.066            | 1.0                      | 0.112                         | 3               | 3               | 0.008               | 0.040            | 471                                |
| NSSR-0062-L2        | -S17                         | 0.625                          | 0.445                      | 20.0                     | 0.059            | 1.0                      | 0.115                         | 3               | 2               | 0.009               | 0.058            | 357                                |
| NSSR-0062-L3        | -S17                         | 0.625                          | 0.445                      | 30.0                     | 0.068            | 1.0                      | 0.124                         | 3               | 3               | 0.009               | 0.058            | 535                                |
| NSSR-0075-L2        | -S17                         | 0.750                          | 0.523                      | 28.0                     | 0.072            | 1.0                      | 0.141                         | 3               | 2               | 0.010               | 0.078            | 407                                |
| NSSR-0075-L3        | -S17                         | 0.750                          | 0.523                      | 42.0                     | 0.082            | 1.0                      | 0.151                         | 3               | 3               | 0.010               | 0.078            | 610                                |
| NSSR-0087-L2        | -S17                         | 0.875                          | 0.625                      | 32.0                     | 0.074            | 1.0                      | 0.133                         | 3               | 2               | 0.012               | 0.094            | 544                                |
| NSSR-0087-L3        | -S17                         | 0.875                          | 0.625                      | 48.0                     | 0.086            | 1.0                      | 0.145                         | 3               | 3               | 0.012               | 0.094            | 816                                |
| NSSR-0100-L2        | -S17                         | 1.000                          | 0.741                      | 36.0                     | 0.074            | 1.0                      | 0.190                         | 3               | 2               | 0.012               | 0.089            | 310                                |
| NSSR-0100-L3        | -S17                         | 1.000                          | 0.741                      | 54.0                     | 0.086            | 1.0                      | 0.202                         | 3               | 3               | 0.012               | 0.089            | 465                                |
| NSSR-0112-L2        | -S17                         | 1.125                          | 0.807                      | 40.0                     | 0.092            | 1.0                      | 0.164                         | 3               | 2               | 0.014               | 0.125            | 552                                |
| NSSR-0112-L3        | -S17                         | 1.125                          | 0.807                      | 60.0                     | 0.106            | 1.0                      | 0.178                         | 3               | 3               | 0.014               | 0.125            | 829                                |
| NSSR-0125-L2        | -S17                         | 1.250                          | 0.921                      | 44.0                     | 0.094            | 1.0                      | 0.165                         | 3               | 2               | 0.016               | 0.133            | 622                                |
| NSSR-0125-L3        | -S17                         | 1.250                          | 0.921                      | 66.0                     | 0.110            | 1.0                      | 0.181                         | 3               | 3               | 0.016               | 0.133            | 933                                |
| NSSR-0137-L2        | -S17                         | 1.375                          | 1.033                      | 48.0                     | 0.094            | 1.0                      | 0.203                         | 3               | 2               | 0.016               | 0.133            | 442                                |
| NSSR-0137-L3        | -S17                         | 1.375                          | 1.033                      | 72.0                     | 0.110            | 1.0                      | 0.219                         | 3               | 3               | 0.016               | 0.133            | 662                                |
| NSSR-0150-L2        | -S17                         | 1.500                          | 1.136                      | 52.0                     | 0.096            | 1.0                      | 0.197                         | 3               | 2               | 0.018               | 0.143            | 517                                |
| NSSR-0150-L3        | -S17                         | 1.500                          | 1.136                      | 78.0                     | 0.114            | 1.0                      | 0.215                         | 3               | 3               | 0.018               | 0.143            | 775                                |
| NSSR-0162-L2        | -S17                         | 1.625                          | 1.249                      | 56.0                     | 0.096            | 1.0                      | 0.240                         | 3               | 2               | 0.018               | 0.143            | 389                                |
| NSSR-0162-L3        | -S17                         | 1.625                          | 1.249                      | 84.0                     | 0.114            | 1.0                      | 0.258                         | 3               | 3               | 0.018               | 0.143            | 584                                |
| NSSR-0175-L2        | -S17                         | 1.750                          | 1.390                      | 60.0                     | 0.096            | 1.0                      | 0.159                         | 4               | 2               | 0.018               | 0.143            | 951                                |
| NSSR-0175-L3        | -S17                         | 1.750                          | 1.390                      | 90.0                     | 0.114            | 1.0                      | 0.177                         | 4               | 3               | 0.018               | 0.143            | 1426                               |
| NSSR-0187-L2        | -S17                         | 1.875                          | 1.507                      | 64.0                     | 0.096            | 1.0                      | 0.181                         | 4               | 2               | 0.018               | 0.143            | 750                                |
| NSSR-0187-L3        | -S17                         | 1.875                          | 1.507                      | 96.0                     | 0.114            | 1.0                      | 0.199                         | 4               | 3               | 0.018               | 0.143            | 1125                               |
| NSSR-0200-L2        | -S17                         | 2.000                          | 1.626                      | 68.0                     | 0.117            | 1.0                      | 0.162                         | 4               | 2               | 0.024               | 0.148            | 1497                               |
| NSSR-0200-L3        | -S17                         | 2.000                          | 1.626                      | 102.0                    | 0.141            | 1.0                      | 0.186                         | 4               | 3               | 0.024               | 0.148            | 2245                               |
| NSSR-0212-L2        | -S17                         | 2.125                          | 1.743                      | 72.0                     | 0.117            | 1.0                      | 0.176                         | 4               | 2               | 0.024               | 0.148            | 1218                               |
| NSSR-0212-L3        | -S17                         | 2.125                          | 1.743                      | 108.0                    | 0.141            | 1.0                      | 0.200                         | 4               | 3               | 0.024               | 0.148            | 1827                               |
| NSSR-0225-L2        | -S17                         | 2.250                          | 1.863                      | 76.0                     | 0.117            | 1.0                      | 0.193                         | 4               | 2               | 0.024               | 0.148            | 1004                               |
| NSSR-0225-L3        | -S17                         | 2.250                          | 1.863                      | 114.0                    | 0.141            | 1.0                      | 0.217                         | 4               | 3               | 0.024               | 0.148            | 1506                               |
| NSSR-0237-L2        | -S17                         | 2.375                          | 1.964                      | 80.0                     | 0.117            | 1.0                      | 0.204                         | 4               | 2               | 0.024               | 0.158            | 915                                |
| NSSR-0237-L3        | -S17                         | 2.375                          | 1.964                      | 120.0                    | 0.141            | 1.0                      | 0.228                         | 4               | 3               | 0.024               | 0.158            | 1373                               |
| NSSR-0250-L2        | -S17                         | 2.500                          | 2.044                      | 84.0                     | 0.117            | 1.0                      | 0.210                         | 4               | 2               | 0.024               | 0.178            | 907                                |
| NSSR-0250-L3        | -S17                         | 2.500                          | 2.044                      | 126.0                    | 0.141            | 1.0                      | 0.234                         | 4               | 3               | 0.024               | 0.178            | 1361                               |
| NSSR-0262-L2        | -S17                         | 2.625                          | 2.159                      | 88.0                     | 0.117            | 1.0                      | 0.231                         | 4               | 2               | 0.024               | 0.178            | 769                                |
| NSSR-0262-L3        | -S17                         | 2.625                          | 2.159                      | 132.0                    | 0.141            | 1.0                      | 0.255                         | 4               | 3               | 0.024               | 0.178            | 1154                               |
| NSSR-0275-L2        | -S17                         | 2.750                          | 2.281                      | 92.0                     | 0.139            | 1.0                      | 0.205                         | 4               | 2               | 0.030               | 0.188            | 1384                               |
| NSSR-0275-L3        | -S17                         | 2.750                          | 2.281                      | 138.0                    | 0.169            | 1.0                      | 0.235                         | 4               | 3               | 0.030               | 0.188            | 2076                               |
| NSSR-0287-L2        | -S17                         | 2.875                          | 2.402                      | 96.0                     | 0.139            | 1.0                      | 0.220                         | 4               | 2               | 0.030               | 0.188            | 1192                               |
| NSSR-0287-L3        | -S17                         | 2.875                          | 2.402                      | 144.0                    | 0.169            | 1.0                      | 0.250                         | 4               | 3               | 0.030               | 0.188            | 1787                               |
| NSSR-0300-L2        | -S17                         | 3.000                          | 2.519                      | 100.0                    | 0.139            | 1.0                      | 0.236                         | 4               | 2               | 0.030               | 0.188            | 1033                               |
| NSSR-0300-L3        | -S17                         | 3.000                          | 2.519                      | 150.0                    | 0.169            | 1.0                      | 0.266                         | 4               | 3               | 0.030               | 0.188            | 1550                               |
| NSSR-0312-L2        | -S17                         | 3.125                          | 2.630                      | 104.0                    | 0.139            | 1.0                      | 0.254                         | 4               | 2               | 0.030               | 0.188            | 902                                |
| NSSR-0312-L3        | -S17                         | 3.125                          | 2.630                      | 156.0                    | 0.169            | 1.0                      | 0.284                         | 4               | 3               | 0.030               | 0.188            | 1352                               |
| NSSR-0325-L2        | -S17                         | 3.250                          | 2.672                      | 108.0                    | 0.139            | 1.0                      | 0.241                         | 4               | 2               | 0.030               | 0.233            | 1059                               |
| NSSR-0325-L3        | -S17                         | 3.250                          | 2.672                      | 162.0                    | 0.169            | 1.0                      | 0.271                         | 4               | 3               | 0.030               | 0.233            | 1588                               |
| NSSR-0337-L2        | -S17                         | 3.375                          | 2.791                      | 112.0                    | 0.139            | 1.0                      | 0.259                         | 4               | 2               | 0.030               | 0.233            | 932                                |
| NSSR-0337-L3        | -S17                         | 3.375                          | 2.791                      | 168.0                    | 0.169            | 1.0                      | 0.289                         | 4               | 3               | 0.030               | 0.233            | 1397                               |
| NSSR-0350-L2        | -S17                         | 3.500                          | 2.908                      | 116.0                    | 0.139            | 1.0                      | 0.280                         | 4               | 2               | 0.030               | 0.233            | 824                                |
| NSSR-0350-L3        | -S17                         | 3.500                          | 2.908                      | 174.0                    | 0.169            | 1.0                      | 0.310                         | 4               | 3               | 0.030               | 0.233            | 1236                               |
| NSSR-0362-L2        | -S17                         | 3.625                          | 3.026                      | 120.0                    | 0.139            | 1.0                      | 0.303                         | 4               | 2               | 0.030               | 0.233            | 732                                |
| NSSR-0362-L3        | -S17                         | 3.625                          | 3.026                      | 180.0                    | 0.169            | 1.0                      | 0.333                         | 4               | 3               | 0.030               | 0.233            | 1098                               |
| NSSR-0375-L2        | -S17                         | 3.750                          | 3.141                      | 124.0                    | 0.139            | 1.0                      | 0.329                         | 4               | 2               | 0.030               | 0.233            | 654                                |
| NSSR-0375-L3        | -S17                         | 3.750                          | 3.141                      | 186.0                    | 0.169            | 1.0                      | 0.359                         | 4               | 3               | 0.030               | 0.233            | 981                                |
| NSSR-0387-L2        | -S17                         | 3.875                          | 3.255                      | 128.0                    | 0.139            | 1.0                      | 0.357                         | 4               | 2               | 0.030               | 0.233            | 586                                |
| NSSR-0387-L3        | -S17                         | 3.875                          | 3.255                      | 192.0                    | 0.169            | 1.0                      | 0.387                         | 4               | 3               | 0.030               | 0.233            | 879                                |
| NSSR-0400-L2        | -S17                         | 4.000                          | 3.423                      | 132.0                    | 0.139            | 5.0                      | 0.216                         | 5               | 2               | 0.030               | 0.233            | 1723                               |
| NSSR-0400-L3        | -S17                         | 4.000                          | 3.423                      | 198.0                    | 0.169            | 5.0                      | 0.246                         | 5               | 3               | 0.030               | 0.233            | 2584                               |

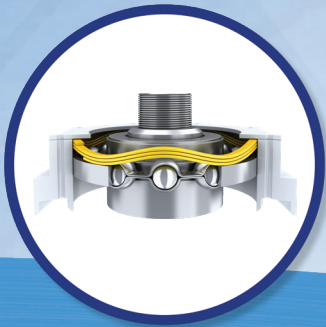
<sup>1</sup>Reference dimension.

<sup>2</sup>Theoretical dimension; measured in lb/in.

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# APPLICATIONS

Nested Spirawave® Wave Springs can be used in applications that normally require stacks of single-turn springs or when a single-turn cannot achieve the force required within the assembly. Below are a few examples of where and how a nested wave spring can be used.



## BEARING PRELOAD

In very high load applications, a three-turn spring produces the high forces necessary for heavy duty bearing preload. Bearing preload is necessary in order to limit noise and vibration within an assembly.

## VALVE

When pressure is applied to the sealing surface, the Nested Spirawave will compress to keep the seal closed. As the seal wears, the spring keeps pressing the seal tight against the sealing surface. Nested Spirawave Wave Springs can provide a very high spring force with a very low profile in a valve where space is limited.

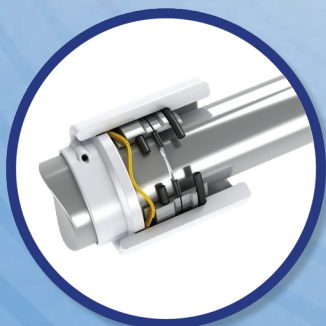


## CONNECTOR

In a connector, the male end rotates following the groove contour in the female end, and the two-turn Nested Spirawave provides the preload between the two halves. This wave spring provides the high load necessary in a very tight radial and axial space.

## CABLE

A two-turn Nested Spirawave replaces a single-turn wave spring stack to provide the required spring force to hold the ends together. A small amount of travel allows for necessary movement for the ends to disconnect when required.



## PUSH SEAL

A two-turn Nested Spirawave provides a higher force than a single-turn spring when a precise spring rate is necessary to maintain a proper seal. The exact pressure of the face against the sealing surface provided by the wave spring is essential to avoid excessive wear while maintaining a proper seal.





## THE SMALLEY ADVANTAGE

At Smalley, you will work with our dedicated and experienced engineers so that you have access to technical expertise from prototype to production. Our engineers have specified tens of thousands of parts for nearly every industry, and they're ready to help with your application.

Smalley's products are certified to ISO 9001, IATF 16949, ISO 13485, AS9100 and ISO 14001. Our near perfect on-time delivery combined with our dedication to quality and service has made us a trusted partner of OEMs worldwide for over 50 years.

Whether you require a new standard Nested Spirawave® or need a custom design, Smalley will provide you the right part, in the right material, with No Tooling Charges™.



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