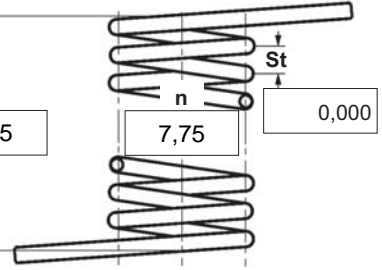



|            |        |                                       |
|------------|--------|---------------------------------------|
| $\alpha$   | degree | Unstressed leg position               |
| $\alpha_1$ | degree | Prestressed rotational angle          |
| $\alpha_2$ | degree | Loaded rotational angle               |
| $\alpha_h$ | degree | Excursion                             |
| $\alpha_n$ | degree | Maximum rotational angle              |
| $d$        | mm     | Wire diameter                         |
| $D_{dmin}$ | mm     | Min. possible mandrel diameter        |
| $D_{dmax}$ | mm     | Max. possible mandrel diameter        |
| $D_e$      | mm     | Outer coil diameter                   |
| $D_i$      | mm     | Inner coil diameter                   |
| $F_1$      | N      | Prestressed spring force              |
| $F_2$      | N      | Loaded spring force                   |
| $Lk_0$     | mm     | Length of spring body when relaxed    |
| $LS$       | mm     | Length of leg                         |
| $M_1$      | Nmm    | Prestressed torque                    |
| $M_2$      | Nmm    | Loaded torque                         |
| $M_n$      | Nmm    | Maximum torque                        |
| $n$        | pc.    | Active coils                          |
| $RH$       | mm     | Distance power flow point from centre |
| $St$       | mm     | Distance between coils (pitch)        |
| Weight     | g      | Weight of one spring in grammes       |



Spring test acc. to DIN ISO 2859/1 test level II

| <b>1 Coiling direction</b><br><input type="checkbox"/> left <input checked="" type="checkbox"/> right  | <b>5 Excursion <math>\alpha_h</math></b> <input type="text"/> degr.   | <b>12 Tolerances to DIN 2194</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Grade</th> <th><math>D_i</math></th> <th><math>Lk_0</math></th> <th>LSH,LSR</th> <th><math>\alpha, \alpha_1, \alpha_2</math></th> <th><math>M_1, M_2</math></th> <th>Wire diameter <math>d</math> to DIN 2076</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td></td> </tr> <tr> <td>2</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td>3</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> | Grade                               | $D_i$                               | $Lk_0$                              | LSH,LSR                             | $\alpha, \alpha_1, \alpha_2$ | $M_1, M_2$ | Wire diameter $d$ to DIN 2076 | 1        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          | 2  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | 3        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|---|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------|------------|-------------------------------|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| Grade  | $D_i$   | $Lk_0$   | LSH,LSR                             | $\alpha, \alpha_1, \alpha_2$        | $M_1, M_2$                          | Wire diameter $d$ to DIN 2076       |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 1  | <input type="checkbox"/>  | <input type="checkbox"/>   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 2  | <input checked="" type="checkbox"/>   | <input checked="" type="checkbox"/>  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 3  | <input type="checkbox"/>  | <input type="checkbox"/>   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| <b>2 Form of legs</b><br>tangential, straight, no bends * <br>*We can also supply torsion springs with any form of leg for an extra charge. | <b>6 Stress cyc. end. <math>N</math></b> <input type="text"/>   | <b>13 Production compensation through</b><br>A spring torque and the associated swing angle $\alpha$ <input checked="" type="checkbox"/><br>A spring torque and the associated swing angle and $\alpha_0$ $n, d$ <input type="checkbox"/><br>$n, D_i$ <input type="checkbox"/><br>Two spring resistances and the associated swing angle $\alpha, n, d$ <input type="checkbox"/><br>$\alpha, n, D_i$ <input type="checkbox"/>   |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| <b>3 Fixing</b><br>Recumbent leg <input type="text"/> Lever leg <input type="text"/>   | <b>7 Stress cycle frequ. <math>n</math></b> <input type="text"/> / <input type="text"/>   |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| <b>4 Load</b><br><input type="checkbox"/> in winding direction<br><input type="checkbox"/> against winding direction   | <b>8 Application temp.</b> <input type="text"/> °C  | <b>Prices</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Cantidad progresiva</th> <th>Precio unidad [EUR]</th> </tr> </thead> <tbody> <tr><td>1</td><td>5,1100 €</td></tr> <tr><td>2</td><td>3,6000 €</td></tr> <tr><td>3</td><td>3,4300 €</td></tr> <tr><td>7</td><td>2,2200 €</td></tr> <tr><td>17</td><td>1,1200 €</td></tr> <tr><td>37</td><td>0,7400 €</td></tr> <tr><td>75</td><td>0,5500 €</td></tr> <tr><td>125</td><td>0,4570 €</td></tr> <tr><td>175</td><td>0,4069 €</td></tr> <tr><td>250</td><td>0,3567 €</td></tr> <tr><td>350</td><td>0,3095 €</td></tr> <tr><td>450</td><td>0,2652 €</td></tr> </tbody> </table>  | Cantidad progresiva                 | Precio unidad [EUR]                 | 1                                   | 5,1100 €                            | 2                            | 3,6000 €   | 3                             | 3,4300 € | 7                        | 2,2200 €                 | 17                       | 1,1200 €                 | 37                       | 0,7400 € | 75 | 0,5500 €                            | 125                                 | 0,4570 €                            | 175                                 | 0,4069 €                            | 250 | 0,3567 € | 350                      | 0,3095 €                 | 450                      | 0,2652 €                 |                          |                                     |
| Cantidad progresiva  | Precio unidad [EUR]   |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 1  | 5,1100 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 2  | 3,6000 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 3  | 3,4300 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 7  | 2,2200 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 17   | 1,1200 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 37   | 0,7400 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 75   | 0,5500 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 125  | 0,4570 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 175  | 0,4069 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 250  | 0,3567 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 350  | 0,3095 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| 450  | 0,2652 €  |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
| <b>Remarks</b><br>País de origen: DE   Número de arancel aduanero: 73202089  | <b>9 Material</b><br>EN 10270-3-1.4310  | <b>11 Surface treatment</b><br><input type="text"/>  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |
|  | <b>10 Wire or rod surface</b><br><input checked="" type="checkbox"/> drawn <input type="checkbox"/> rolled <input type="checkbox"/> metal-cut |  |                                     |                                     |                                     |                                     |                              |            |                               |          |                          |                          |                          |                          |                          |          |    |                                     |                                     |                                     |                                     |                                     |     |          |                          |                          |                          |                          |                          |                                     |