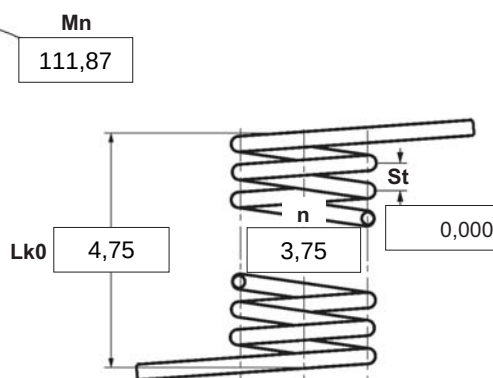


|            |        |                                       |
|------------|--------|---------------------------------------|
| $\alpha$   | degree | Unstressed leg position               |
| $\alpha_1$ | degree | Prestressed rotational angle          |
| $\alpha_2$ | degree | Loaded rotational angle               |
| $\alpha h$ | degree | Excursion                             |
| $\alpha n$ | degree | Maximum rotational angle              |
| d          | mm     | Wire diameter                         |
| Ddmin      | mm     | Min. possible mandrel diameter        |
| Ddmax      | mm     | Max. possible mandrel diameter        |
| De         | mm     | Outer coil diameter                   |
| Di         | mm     | Inner coil diameter                   |
| F1         | N      | Prestressed spring force              |
| F2         | N      | Loaded spring force                   |
| Lk0        | mm     | Length of spring body when relaxed    |
| LS         | mm     | Length of leg                         |
| M1         | Nmm    | Prestressed torque                    |
| M2         | Nmm    | Loaded torque                         |
| Mn         | Nmm    | Maximum torque                        |
| n          | pc.    | Active coils                          |
| RH         | mm     | Distance power flow point from centre |
| St         | mm     | Distance between coils (pitch)        |
| Weight     | a      | 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</math>h</b> <input style="width: 100px;" type="text"/> deg. | <b>12 Tolerances to DIN 2194</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Grade</th> <th>Di</th> <th>Lk0</th> <th>LSH,LSR</th> <th><math>\alpha, \alpha 1, \alpha 2</math></th> <th>M1,M2</th> <th>Wire diameter d to DIN 2076</th> </tr> <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> </table> | Grade                                          | Di                                  | Lk0                                 | LSH,LSR                                                       | $\alpha, \alpha 1, \alpha 2$ | M1,M2                    | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Di                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Lk0                                            | LSH,LSR                             | $\alpha, \alpha 1, \alpha 2$        | M1,M2                                                         | 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><div style="border: 1px solid black; padding: 5px; min-height: 50px;">           tangential, straight, no bends *         </div> <p style="font-size: small;">*We can also supply torsion springs with any form of leg for an extra charge.</p>                                                                                                                                                                                                   | <b>6 Stress cyc. end. N</b> <input style="width: 100px;" type="text"/>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| <b>3 Fixing</b><br>Recumbent leg      Lever leg<br><div style="display: flex; justify-content: space-between;"> <input style="width: 100px;" type="text"/> <input style="width: 100px;" type="text"/> </div>                                                                                                                                                                                                                                                               | <b>7 Stress cycle frequ. n</b> <input style="width: 100px;" 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 style="width: 100px;" type="text"/> °C                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| <b>9 Material</b><br><input style="width: 100px;" type="text"/> 1.4310                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         | <b>13 Production compensation through</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>A spring torque and the associated swing angle</td> <td><math>\alpha</math></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>A spring torque and the associated swing angle and <math>\alpha 0</math></td> <td>n, d</td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>n, Di</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Two spring resistances and the associated swing angle</td> <td><math>\alpha</math>, n, d</td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td><math>\alpha</math>, n, Di</td> <td><input type="checkbox"/></td> </tr> </table>                                                                                                                                                                                                                                                                               | A spring torque and the associated swing angle | $\alpha$                            | <input checked="" type="checkbox"/> | A spring torque and the associated swing angle and $\alpha 0$ | n, d                         | <input type="checkbox"/> |                             | n, Di    | <input type="checkbox"/> | Two spring resistances and the associated swing angle | $\alpha$ , n, d          | <input type="checkbox"/> |                          | $\alpha$ , n, Di | <input type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| A spring torque and the associated swing angle                                                                                                                                                                                                                                                                                                                                                                                                                             | $\alpha$                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/>            |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| A spring torque and the associated swing angle and $\alpha 0$                                                                                                                                                                                                                                                                                                                                                                                                              | n, d                                                                                    | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | n, Di                                                                                   | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| Two spring resistances and the associated swing angle                                                                                                                                                                                                                                                                                                                                                                                                                      | $\alpha$ , n, d                                                                         | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\alpha$ , n, Di                                                                        | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| <b>10 Wire or rod surface</b><br><input checked="" type="checkbox"/> drawn <input type="checkbox"/> rolled <input type="checkbox"/> metal-cut                                                                                                                                                                                                                                                                                                                              |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| <b>11 Surface treatment</b><br><input style="width: 100px;" type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| <b>Prices</b><br><table style="width: 100%;"> <tr> <th style="text-align: left;">Cantidad progresiva</th> <th style="text-align: right;">Precio unidad [EUR]</th> </tr> <tr> <td style="text-align: right;">1</td> <td style="text-align: right;">5,1100 €</td> </tr> <tr> <td style="text-align: right;">2</td> <td style="text-align: right;">3,6000 €</td> </tr> <tr> <td style="text-align: right;">3</td> <td style="text-align: right;">3,4200 €</td> </tr> </table> |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Cantidad progresiva                            | Precio unidad [EUR]                 | 1                                   | 5,1100 €                                                      | 2                            | 3,6000 €                 | 3                           | 3,4200 € |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| Cantidad progresiva                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Precio unidad [EUR]                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5,1100 €                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3,6000 €                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3,4200 €                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |                                     |                                     |                                                               |                              |                          |                             |          |                          |                                                       |                          |                          |                          |                  |                          |                                     |                                     |                                     |                                     |                                     |  |   |                          |                          |                          |                          |                          |                                     |

Remarks

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