

05.2025

| Symbol | Unit | Description                      | Value |
|--------|------|----------------------------------|-------|
| $F_n$  | N    | Maximum spring force             | 2,16  |
| $L_h$  | mm   | Loop height                      | 3,970 |
| $L_k$  | mm   | Length of unstressed spring body | 8,16  |
| $L_0$  | mm   | Unstressed spring length         | 16,10 |
| $s_2$  | mm   | Loaded spring deflection         | 77,84 |
| $s_n$  | mm   | Maximum spring deflection        | 77,84 |
| $sh$   | mm   | Excursion                        | 0,06  |
| $R$    | N/mm | Spring rate                      | 0,32  |

The technical drawing illustrates a helical spring with the following dimensions and features:

- Dimensions:**
  - $L_h$ : Loop height (3,970 mm)
  - $L_k$ : Length of unstressed spring body (8,16 mm)
  - $L_0$ : Unstressed spring length (16,10 mm)
  - $s_2$ : Loaded spring deflection (77,84 mm)
  - $s_n$ : Maximum spring deflection (77,84 mm)
  - $sh$ : Excursion (0,06 mm)
  - $R$ : Spring rate (0,32 N/mm)
- Force-Displacement Diagram:**
  - The diagram shows a linear relationship between force ( $F$ ) and displacement ( $s$ ).
  - Key points on the curve include  $F_0$  (initial force),  $F_1$ ,  $F_2$ , and  $F_n$  (maximum force).
  - Corresponding displacement points are  $s_1$ ,  $s_2$ , and  $s_n$ .
- Spring Geometry:**
  - The spring is shown in a coiled state with a wire diameter  $d$  and mean coil diameter  $D$ .
  - The drawing includes a cross-section view of the spring body.

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>4 Stress cyc. end. N</b> <input style="width: 100px;" type="text"/>                               | <b>10 Tolerances to DIN 2097</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Grade</th> <th>De,Di,D</th> <th>L0</th> <th>F0-Fn</th> <th>Loops</th> <th>Wire diameter d 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 rowspan="3" style="text-align: center; vertical-align: middle;"> <br/>           d to<br/>           DIN 2076         </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> </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> </tr> </tbody> </table> | Grade                                                          | De,Di,D                                   | L0                                                             | F0-Fn                                                               | Loops                                                         | Wire diameter d to DIN 2076                                        | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <br>d to<br>DIN 2076 | 2  | <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"/> |     |          |     |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|--------------------------|--------------------------|--------------------------|--------------------------|-----|----------|-----|----------|
| Grade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | De,Di,D                                                                                              | L0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | F0-Fn                                                          | Loops                                     | Wire diameter d to DIN 2076                                    |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>                                                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>                                       | <input type="checkbox"/>                  | <br>d to<br>DIN 2076                                           |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <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"/>                  |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| <b>2 Loop shape and loop position</b><br>Loop shape<br><div style="border: 1px solid black; padding: 5px; margin: 5px 0;">1/1 German loop</div><br>Loops offset to one another<br>by <div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">180,0</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">+ 46,0</div> degrees<br>(in the dir. of the right helix)                                                                                                                                                                                                                                                                                        | <b>5 Stress cycle frequ. n</b> <input style="width: 100px;" type="text"/> /                          | <b>6 Application temp.</b> <input style="width: 100px;" type="text"/> °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| <b>3 Excursion sh</b> <input style="width: 100px;" type="text"/> mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>7 Material</b><br><div style="border: 1px solid black; padding: 5px; margin: 5px 0;">1.4310</div> | <b>11 Production compensation through</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 80%;">A spring resistance, associated length of tensed spring and L0</td> <td style="width: 20%;">F0, D <input checked="" type="checkbox"/></td> </tr> <tr> <td>A spring resistance, associated length of tensed spring and F0</td> <td>L0, n, d <input type="checkbox"/><br/>L0, D <input type="checkbox"/></td> </tr> <tr> <td>Two spring resistances and associated length of tensed spring</td> <td>L0, n, d <input type="checkbox"/><br/>F0,D <input type="checkbox"/></td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                           | A spring resistance, associated length of tensed spring and L0 | F0, D <input checked="" type="checkbox"/> | A spring resistance, associated length of tensed spring and F0 | L0, n, d <input type="checkbox"/><br>L0, D <input type="checkbox"/> | Two spring resistances and associated length of tensed spring | L0, n, d <input type="checkbox"/><br>F0,D <input type="checkbox"/> |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| A spring resistance, associated length of tensed spring and L0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | F0, D <input checked="" type="checkbox"/>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| A spring resistance, associated length of tensed spring and F0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | L0, n, d <input type="checkbox"/><br>L0, D <input type="checkbox"/>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| Two spring resistances and associated length of tensed spring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L0, n, d <input type="checkbox"/><br>F0,D <input type="checkbox"/>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| <b>8 Wire or rod surface</b><br><input checked="" type="checkbox"/> drawn <input type="checkbox"/> rolled <input type="checkbox"/> metal-cut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                      | <b>9 Surface treatment</b><br><div style="border: 1px solid black; height: 40px; margin: 5px 0;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| <b>Prices</b><br><table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Stupnice množství</th> <th style="text-align: left;">Jedn. cena [EUR]</th> </tr> </thead> <tbody> <tr><td>1</td><td>6,3400 €</td></tr> <tr><td>2</td><td>3,9900 €</td></tr> <tr><td>3</td><td>2,6300 €</td></tr> <tr><td>7</td><td>2,1900 €</td></tr> <tr><td>17</td><td>1,1200 €</td></tr> <tr><td>37</td><td>0,7600 €</td></tr> <tr><td>75</td><td>0,5700 €</td></tr> <tr><td>125</td><td>0,5339 €</td></tr> <tr><td>175</td><td>0,5280 €</td></tr> <tr><td>250</td><td>0,5147 €</td></tr> <tr><td>350</td><td>0,4963 €</td></tr> <tr><td>450</td><td>0,4768 €</td></tr> </tbody> </table> |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Stupnice množství                                              | Jedn. cena [EUR]                          | 1                                                              | 6,3400 €                                                            | 2                                                             | 3,9900 €                                                           | 3 | 2,6300 €                 | 7                        | 2,1900 €                 | 17                       | 1,1200 €             | 37 | 0,7600 €                            | 75                                  | 0,5700 €                            | 125                                 | 0,5339 € | 175                      | 0,5280 €                 | 250                      | 0,5147 €                 | 350 | 0,4963 € | 450 | 0,4768 € |
| Stupnice množství                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Jedn. cena [EUR]                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6,3400 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3,9900 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2,6300 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2,1900 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1,1200 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0,7600 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0,5700 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 125                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,5339 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 175                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,5280 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,5147 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 350                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,4963 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| 450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,4768 €                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |
| <b>Remarks</b><br><div style="border: 1px solid black; padding: 10px; min-height: 150px; margin-top: 10px;">           Zem pvodu: DE   íslo celného sazebníku: 73202085         </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                           |                                                                |                                                                     |                                                               |                                                                    |   |                          |                          |                          |                          |                      |    |                                     |                                     |                                     |                                     |          |                          |                          |                          |                          |     |          |     |          |