

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|-----------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| NS | | | | | | | | | |
| 1.4404 (316 L) | NS | 6.00 | 13.00 | 0.08 | 0.55 | 0.35 | 0.25 | 0.60 | 130.00 |
| 1.4404 (316 L) | NS | 6.60 | 16.00 | 0.08 | 0.76 | 0.30 | 0.52 | 0.82 | 54.00 |
| 1.4404 (316 L) | NS | 8.00 | 16.00 | 0.08 | 0.60 | 0.35 | 0.40 | 0.75 | 80.00 |
| 1.4404 (316 L) | NS | 9.00 | 20.00 | 0.10 | 0.80 | 0.40 | 0.60 | 1.00 | 87.00 |
| 1.4404 (316 L) | NS | 10.00 | 20.00 | 0.10 | 0.82 | 0.35 | 0.60 | 0.95 | 100.00 |
| 1.4404 (316 L) | NS | 12.50 | 25.00 | 0.10 | 1.00 | 0.30 | 1.00 | 1.30 | 98.00 |
| 1.4404 (316 L) | NS | 13.00 | 26.00 | 0.10 | 1.10 | 0.35 | 0.85 | 1.20 | 84.00 |
| 1.4404 (316 L) | NS | 16.00 | 31.50 | 0.13 | 1.18 | 0.43 | 1.21 | 1.64 | 50.00 |
| 1.4404 (316 L) | NS | 19.00 | 37.00 | 0.13 | 1.60 | 0.45 | 1.60 | 2.05 | 94.00 |
| 1.4404 (316 L) | NS | 21.00 | 41.00 | 0.13 | 1.83 | 0.48 | 1.80 | 2.28 | 54.00 |
| 1.4404 (316 L) | NS | 26.00 | 46.00 | 0.10 | 1.70 | 0.40 | 1.70 | 2.10 | 47.00 |
| 1.4404 (316 L) | NS | 26.00 | 46.00 | 0.13 | 1.75 | 0.45 | 1.75 | 2.20 | 72.00 |
| 1.4404 (316 L) | NS | 31.00 | 51.00 | 0.13 | 2.15 | 0.45 | 2.05 | 2.50 | 44.00 |
| 1.4404 (316 L) | NS | 36.00 | 56.00 | 0.13 | 1.90 | 0.45 | 1.95 | 2.40 | 40.00 |
| 1.4404 (316 L) | NS | 39.00 | 59.00 | 0.10 | 1.91 | 0.50 | 1.95 | 2.45 | 24.00 |
| 1.4404 (316 L) | NS | 39.00 | 59.00 | 0.13 | 2.19 | 0.44 | 2.00 | 2.44 | 41.00 |
| 1.4404 (316 L) | NS | 46.00 | 62.50 | 0.13 | 1.65 | 0.50 | 1.50 | 2.00 | 116.00 |
| 1.4404 (316 L) | NS | 46.00 | 71.00 | 0.13 | 2.50 | 0.50 | 2.30 | 2.80 | 44.00 |
| 1.4404 (316 L) | NS | 51.00 | 76.00 | 0.13 | 2.40 | 0.50 | 2.40 | 2.90 | 52.00 |
| 1.4404 (316 L) | NS | 60.00 | 88.00 | 0.15 | 2.50 | 0.65 | 2.65 | 3.30 | 65.00 |
| 1.4404 (316 L) | NS | 65.00 | 90.00 | 0.15 | 2.40 | 0.55 | 2.70 | 3.25 | 72.00 |
| 1.4404 (316 L) | NS | 70.50 | 95.00 | 0.15 | 2.20 | 0.75 | 2.65 | 3.40 | 81.00 |
| 1.4404 (316 L) | NS | 75.00 | 100.00 | 0.15 | 2.50 | 0.55 | 2.75 | 3.30 | 79.00 |
| 1.4404 (316 L) | NS | 77.00 | 107.00 | 0.15 | 2.60 | 0.65 | 2.85 | 3.50 | 50.00 |
| 1.4404 (316 L) | NS | 83.50 | 108.00 | 0.15 | 2.11 | 0.66 | 2.53 | 3.19 | 77.00 |
| 1.4404 (316 L) | NS | 90.00 | 120.00 | 0.15 | 3.10 | 0.60 | 2.90 | 3.50 | 53.00 |
| 1.4404 (316 L) | NS | 102.00 | 132.00 | 0.15 | 2.91 | 0.65 | 2.90 | 3.55 | 60.00 |
| 1.4404 (316 L) | NS | 114.70 | 139.70 | 0.15 | 2.35 | 0.55 | 2.70 | 3.25 | 102.00 |
| 1.4404 (316 L) | NS | 127.00 | 157.00 | 0.15 | 2.73 | 0.70 | 3.00 | 3.70 | 62.00 |
| 1.4404 (316 L) | NS | 127.00 | 157.00 | 0.20 | 2.96 | 0.75 | 3.20 | 3.95 | 130.00 |
| 1.4404 (316 L) | NS | 132.50 | 165.00 | 0.20 | 3.10 | 0.75 | 3.25 | 4.00 | 120.00 |
| 1.4404 (316 L) | NS | 150.00 | 185.00 | 0.20 | 3.40 | 0.75 | 3.50 | 4.25 | 110.00 |
| 1.4404 (316 L) | NS | 162.50 | 195.00 | 0.20 | 2.45 | 0.75 | 3.00 | 3.75 | 144.00 |
| 1.4404 (316 L) | NS | 170.00 | 200.00 | 0.20 | 3.00 | 0.75 | 3.20 | 3.95 | 140.00 |
| 1.4404 (316 L) | NS | 180.00 | 215.00 | 0.20 | 2.90 | 0.75 | 3.40 | 4.15 | 124.00 |
| 1.4404 (316 L) | NS | 200.00 | 235.00 | 0.20 | 3.30 | 0.75 | 3.40 | 4.15 | 120.00 |
| 1.4404 (316 L) | NS | 225.00 | 260.00 | 0.20 | 2.85 | 0.80 | 3.50 | 4.30 | 120.00 |
| 1.4404 (316 L) | NS | 250.00 | 285.00 | 0.20 | 3.30 | 0.80 | 3.20 | 4.00 | 180.00 |
| 1.4404 (316 L) | NS | 270.00 | 310.00 | 0.20 | 3.30 | 0.80 | 3.40 | 4.20 | 140.00 |

ID=inside-ø; OD=outside-ø; t=thickness; lf=free length; lc=compresses length; le=extended length; z=stroke; SRCz=spring rate

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|-----------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| 1.4404 (316 L) | NS | 300.00 | 340.00 | 0.20 | 3.00 | 0.80 | 3.40 | 4.20 | 130.00 |
| 1.4404 (316 L) | NS | 320.00 | 360.00 | 0.20 | 3.00 | 0.80 | 3.80 | 4.60 | 145.00 |
| 1.4404 (316 L) | NS | 335.00 | 360.00 | 0.20 | 2.30 | 1.00 | 1.90 | 2.90 | 450.00 |
| 1.4404 (316 L) | NS | 362.00 | 402.00 | 0.20 | 3.00 | 0.80 | 3.40 | 4.20 | 132.00 |
| 2.4668 (Inconell 718) | NS | 9.00 | 20.00 | 0.15 | 1.00 | 0.60 | 0.60 | 1.20 | 200.00 |
| 2.4668 (Inconell 718) | NS | 19.00 | 37.00 | 0.10 | 1.70 | 0.45 | 1.90 | 2.35 | 61.00 |
| 2.4668 (Inconell 718) | NS | 65.00 | 90.00 | 0.15 | 2.60 | 0.70 | 2.65 | 3.35 | 73.00 |
| 2.4819 (C-276) | NS | 51.00 | 76.00 | 0.15 | 2.45 | 0.70 | 3.00 | 3.70 | 86.00 |
| 2.4856 (Inconell 625) | NS | 14.00 | 26.70 | 0.10 | 1.20 | 0.35 | 1.35 | 1.70 | 96.00 |
| 3.7035 (Titan Gr.2) | NS | 13.00 | 26.00 | 0.10 | 1.62 | 0.50 | 1.10 | 1.60 | 47.00 |
| 3.7035 (Titan Gr.2) | NS | 16.00 | 31.50 | 0.15 | 1.75 | 0.70 | 1.30 | 2.00 | 35.00 |
| 3.7035 (Titan Gr.2) | NS | 21.00 | 41.00 | 0.15 | 2.53 | 0.65 | 2.05 | 2.70 | 28.00 |
| 3.7035 (Titan Gr.2) | NS | 46.00 | 71.00 | 0.10 | 3.10 | 0.80 | 2.40 | 3.20 | 23.00 |
| 3.7035 (Titan Gr.2) | NS | 65.00 | 90.00 | 0.10 | 2.30 | 0.70 | 1.80 | 2.50 | 23.00 |
| 3.7035 (Titan Gr.2) | NS | 65.00 | 90.00 | 0.13 | 2.35 | 0.80 | 1.80 | 2.60 | 31.00 |
| 3.7035 (Titan Gr.2) | NS | 75.00 | 100.00 | 0.15 | 2.60 | 0.80 | 2.40 | 3.20 | 62.00 |
| 3.7035 (Titan Gr.2) | NS | 102.00 | 132.00 | 0.10 | 2.85 | 1.40 | 1.30 | 2.70 | 16.00 |
| AISI633 (AM 350) | NS | 6.00 | 13.00 | 0.08 | 0.68 | 0.40 | 0.50 | 0.90 | 140.00 |
| AISI633 (AM 350) | NS | 6.60 | 16.00 | 0.08 | 0.75 | 0.26 | 0.79 | 1.05 | 47.00 |
| AISI633 (AM 350) | NS | 6.60 | 16.00 | 0.10 | 0.80 | 0.35 | 0.75 | 1.10 | 96.00 |
| AISI633 (AM 350) | NS | 8.00 | 16.00 | 0.08 | 0.75 | 0.45 | 0.50 | 0.95 | 99.00 |
| AISI633 (AM 350) | NS | 9.00 | 20.00 | 0.08 | 1.05 | 0.40 | 1.05 | 1.45 | 59.00 |
| AISI633 (AM 350) | NS | 10.00 | 20.00 | 0.08 | 1.00 | 0.30 | 1.00 | 1.30 | 80.00 |
| AISI633 (AM 350) | NS | 11.00 | 24.00 | 0.08 | 1.20 | 0.40 | 1.00 | 1.40 | 59.00 |
| AISI633 (AM 350) | NS | 13.00 | 26.00 | 0.08 | 1.45 | 0.40 | 1.70 | 2.10 | 42.00 |
| AISI633 (AM 350) | NS | 14.00 | 26.70 | 0.08 | 1.35 | 0.35 | 1.30 | 1.65 | 64.00 |
| AISI633 (AM 350) | NS | 16.00 | 31.50 | 0.10 | 1.52 | 0.35 | 1.60 | 1.95 | 37.00 |
| AISI633 (AM 350) | NS | 19.00 | 37.00 | 0.10 | 1.90 | 0.35 | 2.30 | 2.65 | 68.00 |
| AISI633 (AM 350) | NS | 19.00 | 37.00 | 0.13 | 2.04 | 0.40 | 2.30 | 2.70 | 98.00 |
| AISI633 (AM 350) | NS | 21.00 | 41.00 | 0.10 | 2.40 | 0.40 | 2.45 | 2.85 | 36.00 |
| AISI633 (AM 350) | NS | 25.40 | 44.45 | 0.10 | 2.00 | 0.45 | 2.55 | 3.00 | 50.00 |
| AISI633 (AM 350) | NS | 26.00 | 46.00 | 0.10 | 1.90 | 0.45 | 2.25 | 2.70 | 50.00 |
| AISI633 (AM 350) | NS | 31.00 | 51.00 | 0.10 | 2.50 | 0.50 | 2.70 | 3.20 | 34.00 |
| AISI633 (AM 350) | NS | 36.00 | 56.00 | 0.10 | 2.40 | 0.45 | 2.75 | 3.20 | 35.00 |
| AISI633 (AM 350) | NS | 39.00 | 59.00 | 0.10 | 2.45 | 0.50 | 2.70 | 3.20 | 31.00 |
| AISI633 (AM 350) | NS | 46.00 | 62.50 | 0.10 | 2.10 | 0.40 | 2.70 | 3.10 | 77.00 |
| AISI633 (AM 350) | NS | 46.00 | 71.00 | 0.13 | 2.90 | 0.55 | 3.70 | 4.25 | 54.00 |
| AISI633 (AM 350) | NS | 51.00 | 76.00 | 0.13 | 2.65 | 0.60 | 3.18 | 3.78 | 57.00 |
| AISI633 (AM 350) | NS | 60.00 | 88.00 | 0.13 | 2.85 | 0.55 | 3.70 | 4.25 | 57.00 |
| AISI633 (AM 350) | NS | 65.00 | 90.00 | 0.13 | 2.70 | 0.70 | 3.50 | 4.20 | 62.00 |

ID=inside- \varnothing ; OD=outside- \varnothing ; t=thickness; lf=free length; lc=compresses length; le=extended length; z=stroke; SRCz=spring rate

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| AISI633 (AM 350) | NS | 70.50 | 95.00 | 0.13 | 2.85 | 0.80 | 3.20 | 4.00 | 72.00 |
| AISI633 (AM 350) | NS | 75.00 | 100.00 | 0.13 | 2.60 | 0.55 | 3.50 | 4.05 | 60.00 |
| AISI633 (AM 350) | NS | 77.00 | 107.00 | 0.13 | 3.05 | 0.73 | 4.27 | 5.00 | 42.00 |
| AISI633 (AM 350) | NS | 90.00 | 120.00 | 0.13 | 3.30 | 0.76 | 3.74 | 4.50 | 43.00 |
| AISI633 (AM 350) | NS | 102.00 | 132.00 | 0.13 | 3.10 | 0.70 | 3.80 | 4.50 | 50.00 |
| AISI633 (AM 350) | NS | 102.00 | 132.00 | 0.20 | 3.20 | 0.75 | 3.75 | 4.50 | 160.00 |
| AISI633 (AM 350) | NS | 127.00 | 157.00 | 0.15 | 3.10 | 0.75 | 3.65 | 4.40 | 87.00 |
| AISI633 (AM 350) | NS | 132.50 | 165.00 | 0.20 | 3.25 | 0.75 | 3.80 | 4.55 | 153.00 |
| AISI633 (AM 350) | NS | 150.00 | 185.00 | 0.15 | 3.20 | 0.75 | 4.40 | 5.15 | 62.00 |
| AISI633 (AM 350) | NS | 162.50 | 195.00 | 0.15 | 3.40 | 0.70 | 4.55 | 5.25 | 85.00 |
| AISI633 (AM 350) | NS | 170.00 | 200.00 | 0.15 | 3.10 | 0.80 | 3.80 | 4.60 | 102.00 |
| AISI633 (AM 350) | NS | 180.00 | 215.00 | 0.15 | 3.50 | 0.75 | 4.35 | 5.10 | 70.00 |
| AISI633 (AM 350) | NS | 200.00 | 235.00 | 0.15 | 3.50 | 0.75 | 4.35 | 5.10 | 71.00 |
| AISI633 (AM 350) | NS | 250.00 | 285.00 | 0.15 | 3.80 | 0.75 | 4.35 | 5.10 | 78.00 |
| AISI633 (AM 350) | NS | 270.00 | 310.00 | 0.20 | 3.50 | 0.80 | 4.60 | 5.40 | 130.00 |
| AISI633 (AM 350) | NS | 320.00 | 360.00 | 0.20 | 3.80 | 0.80 | 4.60 | 5.40 | 120.00 |

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|---------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| BS | | | | | | | | | |
| 1.4404 (316 L) | BS | 9.00 | 31.50 | 0.13 | 1.40 | 0.55 | 1.20 | 1.75 | 54.00 |
| 1.4404 (316 L) | BS | 21.00 | 49.00 | 0.13 | 1.75 | 0.50 | 2.10 | 2.60 | 47.00 |
| 1.4404 (316 L) | BS | 36.80 | 72.00 | 0.15 | 2.90 | 0.55 | 3.30 | 3.85 | 78.00 |
| 1.4404 (316 L) | BS | 41.50 | 81.00 | 0.20 | 3.06 | 0.80 | 3.00 | 3.80 | 97.00 |
| 1.4404 (316 L) | BS | 47.00 | 88.00 | 0.20 | 2.95 | 0.70 | 3.30 | 4.00 | 100.00 |
| 1.4404 (316 L) | BS | 52.00 | 95.00 | 0.20 | 3.65 | 0.80 | 3.60 | 4.40 | 88.00 |
| 1.4404 (316 L) | BS | 56.00 | 102.00 | 0.20 | 4.20 | 0.75 | 3.70 | 4.45 | 81.00 |
| 1.4404 (316 L) | BS | 72.00 | 115.00 | 0.20 | 4.10 | 0.75 | 3.60 | 4.35 | 77.00 |
| 1.4404 (316 L) | BS | 77.50 | 120.00 | 0.20 | 3.60 | 0.85 | 3.30 | 4.15 | 88.00 |
| 1.4404 (316 L) | BS | 82.00 | 125.00 | 0.20 | 3.71 | 0.85 | 3.45 | 4.30 | 70.00 |
| 1.4404 (316 L) | BS | 90.50 | 135.00 | 0.20 | 3.80 | 0.80 | 4.00 | 4.80 | 76.00 |
| 1.4404 (316 L) | BS | 92.00 | 142.00 | 0.20 | 4.42 | 1.10 | 3.90 | 5.00 | 53.00 |
| 1.4404 (316 L) | BS | 92.00 | 149.00 | 0.25 | 4.65 | 0.80 | 4.50 | 5.30 | 138.00 |
| 1.4404 (316 L) | BS | 102.50 | 150.00 | 0.20 | 5.20 | 1.55 | 4.45 | 6.00 | 60.00 |
| 1.4404 (316 L) | BS | 107.50 | 155.00 | 0.20 | 5.10 | 1.60 | 4.40 | 6.00 | 65.00 |
| 1.4404 (316 L) | BS | 162.50 | 210.00 | 0.20 | 5.15 | 1.55 | 4.40 | 5.95 | 62.00 |
| 1.4404 (316 L) | BS | 403.00 | 460.90 | 0.30 | 3.50 | 1.00 | 3.50 | 4.50 | 236.00 |
| 1.4404 (316 L) | BS | 481.00 | 540.00 | 0.30 | 3.50 | 1.00 | 3.50 | 4.50 | 350.00 |
| 1.4404 (316 L) | BS | 506.00 | 564.30 | 0.30 | 3.50 | 1.00 | 3.50 | 4.50 | 358.00 |
| 1.4404 (316 L) | BS | 536.00 | 596.00 | 0.30 | 3.50 | 1.00 | 3.50 | 4.50 | 378.00 |
| 1.4404 (316 L) | BS | 660.00 | 720.00 | 0.30 | 3.50 | 1.00 | 3.50 | 4.50 | 455.00 |
| 2.4819 (C-276) | BS | 47.00 | 88.00 | 0.20 | 3.30 | 0.78 | 3.42 | 4.20 | 110.00 |
| 3.7035 (Titan Gr.2) | BS | 82.00 | 125.00 | 0.10 | 4.10 | 1.20 | 1.80 | 3.00 | 8.60 |
| AISI633 (AM 350) | BS | 9.00 | 31.50 | 0.13 | 1.65 | 0.50 | 1.90 | 2.40 | 51.00 |
| AISI633 (AM 350) | BS | 21.00 | 49.00 | 0.13 | 3.40 | 0.60 | 3.50 | 4.10 | 43.00 |
| AISI633 (AM 350) | BS | 36.80 | 72.00 | 0.13 | 3.90 | 0.60 | 3.80 | 4.40 | 68.00 |
| AISI633 (AM 350) | BS | 41.50 | 81.00 | 0.13 | 3.60 | 0.60 | 4.20 | 4.80 | 45.00 |
| AISI633 (AM 350) | BS | 52.00 | 95.00 | 0.13 | 4.70 | 0.60 | 4.40 | 5.00 | 80.00 |
| AISI633 (AM 350) | BS | 56.00 | 102.00 | 0.15 | 5.10 | 0.68 | 4.62 | 5.30 | 50.00 |
| AISI633 (AM 350) | BS | 72.00 | 115.00 | 0.15 | 4.40 | 0.70 | 4.50 | 5.20 | 55.00 |
| AISI633 (AM 350) | BS | 77.50 | 120.00 | 0.15 | 4.30 | 0.68 | 4.00 | 4.68 | 72.00 |
| AISI633 (AM 350) | BS | 82.00 | 125.00 | 0.15 | 4.50 | 0.75 | 4.35 | 5.10 | 56.00 |
| AISI633 (AM 350) | BS | 102.50 | 150.00 | 0.20 | 5.00 | 1.25 | 5.55 | 6.80 | 55.00 |
| AISI633 (AM 350) | BS | 162.50 | 210.00 | 0.20 | 5.27 | 1.30 | 5.80 | 7.10 | 56.00 |

ID=inside-ø; OD=outside-ø; t=thickness; lf=free length; lc=compresses length; le=extended length; z=stroke; SRCz=spring rate

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|-----------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| DS | | | | | | | | | |
| 1.4404 (316 L) | DS | 16.20 | 26.00 | 0.10 | 0.82 | 0.35 | 0.80 | 1.15 | 105.00 |
| 1.4404 (316 L) | DS | 19.00 | 31.70 | 0.13 | 1.00 | 0.43 | 1.00 | 1.43 | 175.00 |
| 1.4404 (316 L) | DS | 21.30 | 34.00 | 0.10 | 0.90 | 0.40 | 1.10 | 1.50 | 100.00 |
| 1.4404 (316 L) | DS | 23.80 | 36.50 | 0.10 | 1.15 | 0.35 | 1.15 | 1.50 | 95.00 |
| 1.4404 (316 L) | DS | 24.00 | 35.00 | 0.10 | 0.90 | 0.30 | 0.90 | 1.20 | 116.00 |
| 1.4404 (316 L) | DS | 25.40 | 38.10 | 0.10 | 1.03 | 0.40 | 0.95 | 1.35 | 102.00 |
| 1.4404 (316 L) | DS | 27.00 | 39.70 | 0.10 | 1.15 | 0.40 | 1.15 | 1.55 | 98.00 |
| 1.4404 (316 L) | DS | 30.20 | 42.90 | 0.10 | 1.06 | 0.37 | 1.23 | 1.60 | 109.00 |
| 1.4404 (316 L) | DS | 31.80 | 44.50 | 0.10 | 1.15 | 0.38 | 1.32 | 1.70 | 104.00 |
| 1.4404 (316 L) | DS | 33.30 | 46.00 | 0.10 | 1.25 | 0.35 | 1.00 | 1.35 | 106.00 |
| 1.4404 (316 L) | DS | 34.30 | 47.00 | 0.10 | 1.00 | 0.35 | 1.20 | 1.55 | 95.00 |
| 1.4404 (316 L) | DS | 36.50 | 49.20 | 0.10 | 1.17 | 0.35 | 1.35 | 1.70 | 89.00 |
| 1.4404 (316 L) | DS | 39.70 | 52.40 | 0.10 | 1.20 | 0.40 | 1.25 | 1.65 | 102.00 |
| 1.4404 (316 L) | DS | 42.80 | 55.50 | 0.13 | 1.15 | 0.44 | 1.00 | 1.44 | 208.00 |
| 1.4404 (316 L) | DS | 46.00 | 57.00 | 0.13 | 0.85 | 0.44 | 0.80 | 1.24 | 280.00 |
| 1.4404 (316 L) | DS | 46.00 | 58.70 | 0.13 | 1.10 | 0.44 | 0.90 | 1.34 | 220.00 |
| 1.4404 (316 L) | DS | 49.20 | 61.90 | 0.13 | 1.01 | 0.45 | 0.90 | 1.35 | 295.00 |
| 1.4404 (316 L) | DS | 52.40 | 65.10 | 0.10 | 1.15 | 0.40 | 1.15 | 1.55 | 131.00 |
| 1.4404 (316 L) | DS | 52.40 | 65.10 | 0.13 | 1.10 | 0.40 | 1.20 | 1.60 | 210.00 |
| 1.4404 (316 L) | DS | 55.00 | 67.00 | 0.13 | 1.15 | 0.50 | 0.85 | 1.35 | 265.00 |
| 1.4404 (316 L) | DS | 58.70 | 71.40 | 0.13 | 1.05 | 0.44 | 0.95 | 1.39 | 275.00 |
| 1.4404 (316 L) | DS | 61.90 | 74.60 | 0.13 | 1.10 | 0.45 | 0.90 | 1.35 | 290.00 |
| 1.4404 (316 L) | DS | 61.90 | 74.60 | 0.20 | 1.30 | 0.65 | 0.70 | 1.35 | 1247.00 |
| 1.4404 (316 L) | DS | 65.10 | 81.00 | 0.13 | 1.40 | 0.44 | 1.26 | 1.70 | 150.00 |
| 1.4404 (316 L) | DS | 68.30 | 84.10 | 0.13 | 1.43 | 0.40 | 1.40 | 1.80 | 158.00 |
| 1.4404 (316 L) | DS | 70.50 | 84.10 | 0.13 | 1.10 | 0.44 | 0.96 | 1.40 | 235.00 |
| 1.4404 (316 L) | DS | 76.20 | 92.10 | 0.13 | 1.45 | 0.44 | 1.26 | 1.70 | 162.00 |
| 1.4404 (316 L) | DS | 84.00 | 98.40 | 0.13 | 1.40 | 0.45 | 1.35 | 1.80 | 210.00 |
| 1.4404 (316 L) | DS | 88.90 | 104.80 | 0.13 | 1.50 | 0.40 | 1.60 | 2.00 | 174.00 |
| 1.4404 (316 L) | DS | 92.10 | 108.00 | 0.13 | 1.45 | 0.40 | 1.50 | 1.90 | 175.00 |
| 1.4404 (316 L) | DS | 98.40 | 114.30 | 0.13 | 1.45 | 0.44 | 1.26 | 1.70 | 197.00 |
| 1.4404 (316 L) | DS | 101.60 | 117.50 | 0.13 | 1.45 | 0.45 | 1.35 | 1.80 | 203.00 |
| 1.4404 (316 L) | DS | 107.90 | 123.80 | 0.13 | 1.40 | 0.44 | 1.26 | 1.70 | 210.00 |
| 1.4404 (316 L) | DS | 111.10 | 127.00 | 0.13 | 1.45 | 0.44 | 1.26 | 1.70 | 205.00 |
| 1.4404 (316 L) | DS | 127.00 | 143.00 | 0.13 | 1.45 | 0.44 | 1.21 | 1.65 | 246.00 |
| 1.4404 (316 L) | DS | 127.00 | 143.00 | 0.15 | 1.24 | 0.45 | 1.15 | 1.60 | 360.00 |
| 1.4404 (316 L) | DS | 160.00 | 180.00 | 0.15 | 1.25 | 0.51 | 1.00 | 1.51 | 220.00 |
| 1.4404 (316 L) | DS | 170.00 | 184.00 | 0.20 | 0.93 | 0.57 | 0.70 | 1.27 | 2540.00 |
| 1.4404 (316 L) | DS | 308.20 | 333.30 | 0.20 | 2.10 | 1.00 | 1.40 | 2.40 | 474.00 |

ID=inside-ø; OD=outside-ø; t=thickness; lf=free length; lc=compresses length; le=extended length; z=stroke; SRCz=spring rate

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|-----------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| 1.4404 (316 L) | DS | 377.00 | 402.00 | 0.15 | 1.90 | 0.65 | 2.40 | 3.05 | 320.00 |
| 2.4668 (Inconell 718) | DS | 58.70 | 71.40 | 0.10 | 1.20 | 0.50 | 1.05 | 1.55 | 210.00 |
| 2.4668 (Inconell 718) | DS | 58.70 | 71.40 | 0.15 | 1.23 | 0.60 | 0.95 | 1.55 | 700.00 |
| 2.4668 (Inconell 718) | DS | 68.30 | 84.10 | 0.15 | 1.75 | 0.50 | 1.50 | 2.00 | 225.00 |
| 2.4819 (C-276) | DS | 52.40 | 65.10 | 0.15 | 1.19 | 0.40 | 1.05 | 1.45 | 388.00 |
| 3.7035 (Titan Gr.2) | DS | 19.05 | 29.70 | 0.08 | 1.00 | 0.40 | 0.95 | 1.35 | 36.00 |
| AISI633 (AM 350) | DS | 19.00 | 31.70 | 0.10 | 1.35 | 0.35 | 1.40 | 1.75 | 117.00 |
| AISI633 (AM 350) | DS | 21.30 | 34.00 | 0.10 | 1.50 | 0.40 | 1.40 | 1.80 | 105.00 |
| AISI633 (AM 350) | DS | 23.80 | 36.50 | 0.10 | 1.45 | 0.40 | 1.30 | 1.70 | 110.00 |
| AISI633 (AM 350) | DS | 25.40 | 38.10 | 0.10 | 1.45 | 0.40 | 1.30 | 1.70 | 122.00 |
| AISI633 (AM 350) | DS | 27.00 | 39.70 | 0.10 | 1.45 | 0.35 | 1.66 | 2.01 | 125.00 |
| AISI633 (AM 350) | DS | 30.20 | 42.90 | 0.10 | 1.40 | 0.40 | 1.30 | 1.70 | 136.00 |
| AISI633 (AM 350) | DS | 31.80 | 44.50 | 0.10 | 1.45 | 0.40 | 1.50 | 1.90 | 113.00 |
| AISI633 (AM 350) | DS | 33.30 | 46.00 | 0.10 | 1.45 | 0.35 | 1.60 | 1.95 | 134.00 |
| AISI633 (AM 350) | DS | 34.30 | 47.00 | 0.10 | 1.35 | 0.40 | 1.40 | 1.80 | 149.00 |
| AISI633 (AM 350) | DS | 36.50 | 49.20 | 0.10 | 1.55 | 0.40 | 1.65 | 2.05 | 112.00 |
| AISI633 (AM 350) | DS | 39.70 | 52.40 | 0.10 | 1.40 | 0.40 | 1.50 | 1.90 | 164.00 |
| AISI633 (AM 350) | DS | 42.80 | 55.50 | 0.10 | 1.40 | 0.33 | 1.60 | 1.93 | 141.00 |
| AISI633 (AM 350) | DS | 42.80 | 55.50 | 0.13 | 1.50 | 0.44 | 1.51 | 1.95 | 233.00 |
| AISI633 (AM 350) | DS | 42.80 | 55.50 | 0.15 | 1.40 | 0.51 | 1.30 | 1.81 | 340.00 |
| AISI633 (AM 350) | DS | 46.00 | 57.00 | 0.10 | 1.15 | 0.40 | 1.10 | 1.50 | 146.00 |
| AISI633 (AM 350) | DS | 52.40 | 65.10 | 0.10 | 1.55 | 0.40 | 1.40 | 1.80 | 120.00 |
| AISI633 (AM 350) | DS | 55.00 | 67.00 | 0.10 | 1.45 | 0.40 | 1.70 | 2.10 | 167.00 |
| AISI633 (AM 350) | DS | 58.70 | 71.40 | 0.10 | 1.40 | 0.40 | 1.40 | 1.80 | 210.00 |
| AISI633 (AM 350) | DS | 61.90 | 74.60 | 0.13 | 1.40 | 0.44 | 1.30 | 1.74 | 371.00 |
| AISI633 (AM 350) | DS | 65.10 | 81.00 | 0.08 | 1.75 | 0.40 | 2.10 | 2.50 | 45.00 |
| AISI633 (AM 350) | DS | 65.10 | 81.00 | 0.13 | 1.80 | 0.45 | 2.25 | 2.70 | 160.00 |
| AISI633 (AM 350) | DS | 68.30 | 84.10 | 0.13 | 1.80 | 0.45 | 2.10 | 2.55 | 165.00 |
| AISI633 (AM 350) | DS | 70.50 | 84.10 | 0.10 | 1.57 | 0.40 | 1.85 | 2.25 | 140.00 |
| AISI633 (AM 350) | DS | 70.50 | 84.10 | 0.13 | 1.42 | 0.44 | 1.71 | 2.15 | 281.00 |
| AISI633 (AM 350) | DS | 70.50 | 84.10 | 0.15 | 1.35 | 0.50 | 1.60 | 2.10 | 458.00 |
| AISI633 (AM 350) | DS | 76.20 | 92.10 | 0.13 | 1.80 | 0.45 | 2.10 | 2.55 | 171.00 |
| AISI633 (AM 350) | DS | 84.00 | 98.40 | 0.13 | 1.75 | 0.45 | 2.10 | 2.55 | 250.00 |
| AISI633 (AM 350) | DS | 88.90 | 104.80 | 0.13 | 1.80 | 0.45 | 2.10 | 2.55 | 205.00 |
| AISI633 (AM 350) | DS | 92.10 | 108.00 | 0.10 | 1.90 | 0.40 | 2.10 | 2.50 | 110.00 |
| AISI633 (AM 350) | DS | 92.10 | 108.00 | 0.13 | 1.80 | 0.45 | 2.10 | 2.55 | 201.00 |
| AISI633 (AM 350) | DS | 98.40 | 114.30 | 0.13 | 1.85 | 0.45 | 2.10 | 2.55 | 219.00 |
| AISI633 (AM 350) | DS | 101.60 | 117.50 | 0.13 | 1.80 | 0.44 | 2.10 | 2.54 | 226.00 |
| AISI633 (AM 350) | DS | 107.90 | 123.80 | 0.13 | 1.68 | 0.43 | 1.97 | 2.40 | 261.00 |
| AISI633 (AM 350) | DS | 111.10 | 127.00 | 0.15 | 1.70 | 0.50 | 2.00 | 2.50 | 380.00 |

ID=inside-ø; OD=outside-ø; t=thickness; lf=free length; lc=compresses length; le=extended length; z=stroke; SRCz=spring rate

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| AISI633 (AM 350) | DS | 127.00 | 143.00 | 0.15 | 1.70 | 0.50 | 1.95 | 2.45 | 435.00 |
| AISI633 (AM 350) | DS | 130.00 | 149.00 | 0.15 | 2.25 | 0.50 | 2.30 | 2.80 | 289.00 |
| AISI633 (AM 350) | DS | 335.00 | 360.00 | 0.15 | 2.76 | 0.90 | 2.90 | 3.80 | 288.00 |

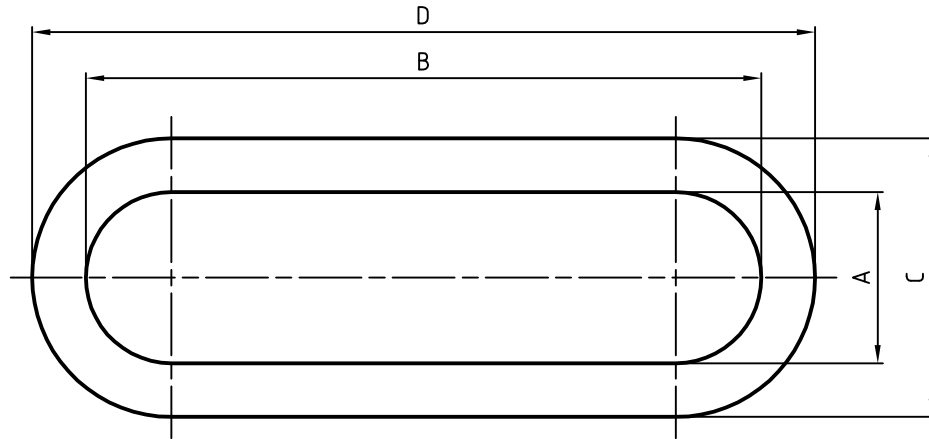
| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|-----------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| NZ | | | | | | | | | |
| 1.4404 (316 L) | NZ | 19.00 | 32.00 | 0.13 | 1.30 | 0.95 | 0.58 | 1.53 | 90.00 |

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| RS | | | | | | | | | |
| 1.4404 Racetrack | RS | 42.00 | 52.00 | 0.10 | 0.78 | 0.34 | 0.86 | 1.20 | 172.00 |
| 1.4404 Racetrack | RS | 130.00 | 150.00 | 0.13 | 1.78 | 0.44 | 1.76 | 2.20 | 90.00 |
| 1.4404 Racetrack | RS | 149.70 | 167.80 | 0.13 | 1.60 | 0.50 | 1.40 | 1.90 | 150.00 |
| 1.4404 Racetrack | RS | 158.20 | 186.20 | 0.15 | 2.30 | 0.70 | 1.95 | 2.65 | 78.00 |
| 1.4404 Racetrack | RS | 194.00 | 214.00 | 0.15 | 1.50 | 0.55 | 1.15 | 1.70 | 245.00 |
| 1.4404 Racetrack | RS | 220.80 | 248.80 | 0.15 | 2.40 | 0.70 | 2.00 | 2.70 | 135.00 |
| 1.4404 Racetrack | RS | 235.20 | 263.20 | 0.15 | 2.20 | 0.65 | 2.05 | 2.70 | 121.00 |
| 1.4404 Racetrack | RS | 372.00 | 400.00 | 0.15 | 2.11 | 0.60 | 1.60 | 2.20 | 170.00 |

| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| RZ | | | | | | | | | |
| 1.4404 Racetrack | RZ | 130.00 | 150.00 | 0.13 | 1.10 | 0.42 | 1.00 | 1.42 | 130.00 |
| 1.4404 Racetrack | RZ | 318.00 | 346.00 | 0.15 | 2.00 | 1.25 | 1.00 | 2.25 | 165.00 |
| 1.4404 Racetrack | RZ | 1200.00 | 1260.00 | 0.35 | 3.00 | 1.00 | 2.50 | 3.50 | 1.00 |
| 1.4404 Racetrack | RZ | 1360.00 | 1420.00 | 0.35 | 3.00 | 1.00 | 2.50 | 3.50 | 1.00 |

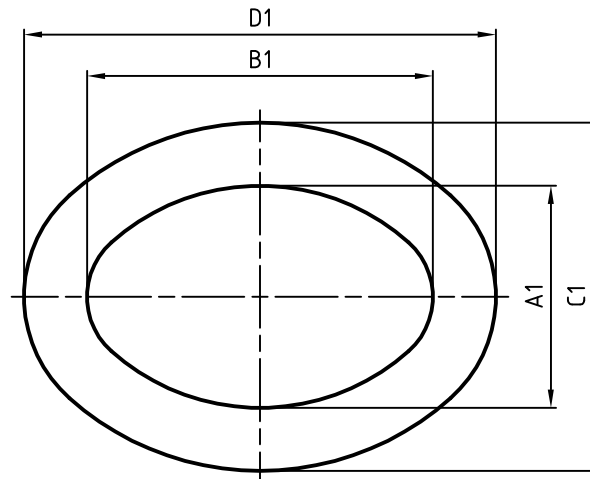
| Typ Material | Form | ID [mm] | OD [mm] | t [mm] | lf [mm] | lc [mm] | z [mm] | le [mm] | SRCz [N/mm] |
|--------------------|------|------------|------------|-----------|------------|------------|-----------|------------|----------------|
| ES | | | | | | | | | |
| 1.4404 Elipsenbalg | ES | 117.50 | 155.50 | 0.20 | 2.90 | 0.65 | 2.95 | 3.60 | 104.00 |

Racetrack



| | Size | A | B | C | D |
|----|-----------------------------|------|-------|-------|-------|
| RS | 24/42 - 34/52 | 24 | 42 | 34 | 52 |
| RZ | 28/130 - 48/150 | 28 | 130 | 48 | 150 |
| RS | 30/194 - 50/214 | 30 | 194 | 50 | 214 |
| RS | 40/130-60/150 | 40 | 130 | 60 | 150 |
| RS | 62.3 / 90.3 - 220.8 / 248.8 | 62.3 | 220.8 | 90.3 | 248.8 |
| RS | 75.5/158.2-103.5/186.2 | 75.5 | 158.2 | 103.5 | 186.2 |
| RS | 75.6/235-103.6/263 | 75.3 | 235 | 103.6 | 263 |
| RZ | 92/318 - 120/346 | 92 | 318 | 120 | 346 |
| RS | 70/372 - 98/400 | 70 | 372 | 98 | 400 |
| RZ | 160/1200 - 220/1260 | 160 | 1200 | 220 | 1260 |
| RZ | 320/1360 - 380/1420 | 320 | 1360 | 380 | 1420 |

Elliptical



| | Size | A1 | B1 | C1 | D1 |
|----|--------------------------|------|-------|-------|-------|
| EN | 66.7/104.7 - 117.5/155.5 | 66.7 | 117.5 | 104.7 | 155.5 |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | | |
|-------------|------------|----------|---------------------|------------|----------|
| | | | | Oberfläche | |
| Rauheit | | Kanten | | Werkstoff | |
| erstellt | 25.03.2010 | R.Hüster | Projekt | | |
| freigabe | | | Noncircular Bellows | | |
| Datum | | Name | Bezeichnung | | |
| | | | NO 800 010 | D | A3 |
| | | | Zeichnungsnr. | Index | Massstab |
| Ersatz für: | | | Ersetzt durch: | | |

Allgmeintoleranz:
 Längen- und Winkelmasse:
 DIN ISO 2768-1 Genauigkeit: M (mittel)
 Form- und Lagetoleranz:
 DIN ISO 2768-2 Genauigkeit: K

Projektion E

