

SISTEMSKJE OPRUGE

- Tehnički opis
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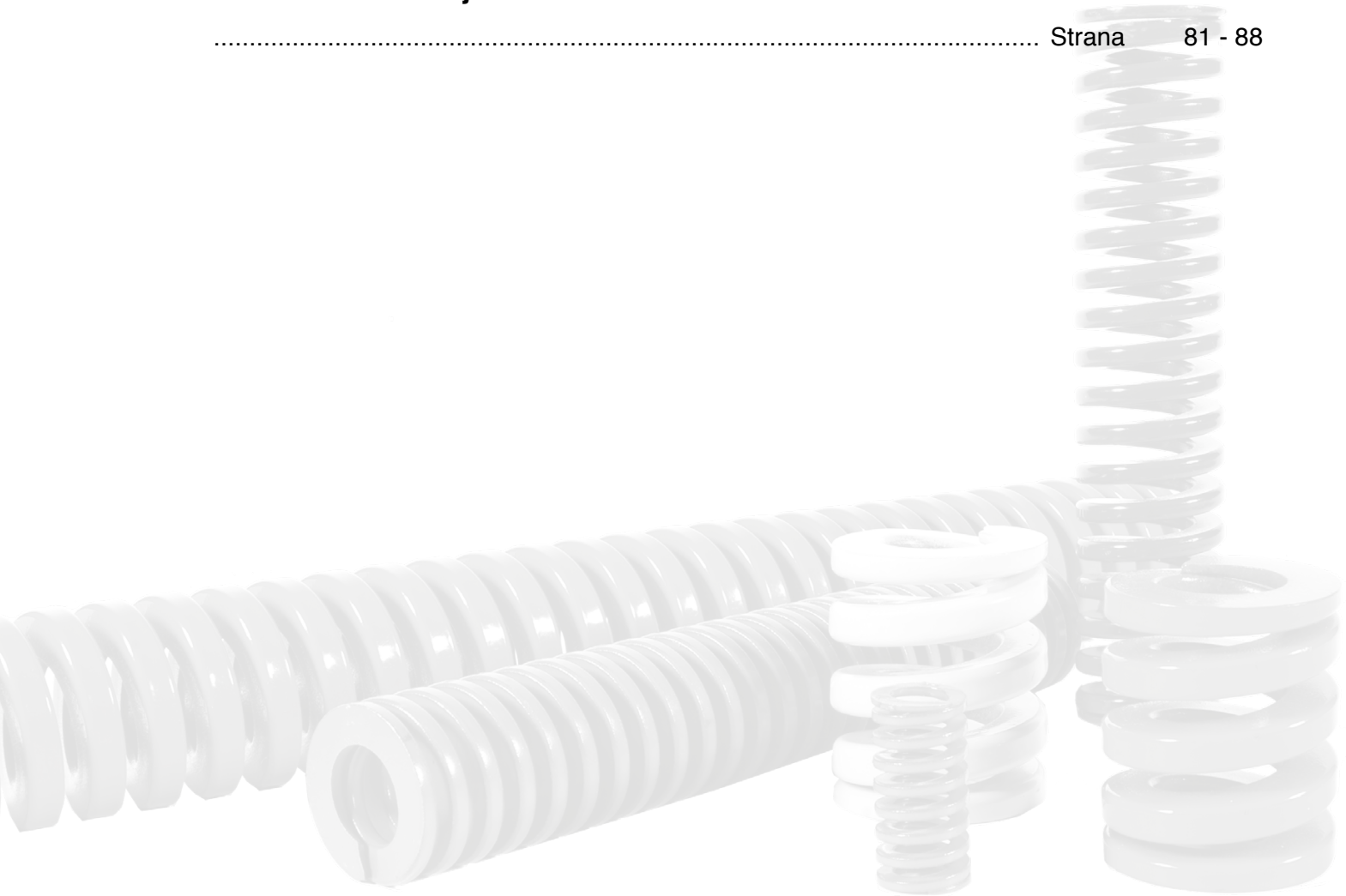
Sistemske opruge

Tehnički opis

..... Strana 79 - 80

Tabele sa dimenzijama

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Sistemske opruge

Tehnički opis

Sistemske opruge dopunjuju program tanjirastih opruga.

S obzirom da se izrađuju prema drugim parametrima, dimenzijama i ISO standardima, važe veće tolerancije u odnosu na naš program standardnih opruga. Sistemske opruge koje se nalaze u katalogu su spiralnog cilindričnog oblika i izrađuju se od ovalnih žica. Prečnik žice, broj namotaja, razmak i dužina segmenta se ne navode, jer ih je zahtevnije tehnički odrediti.

Opruga se bira na osnovu ugradnog mesta i na osnovu 4 klase opterećenja:

| | | |
|-------------------------|--------|--|
| Malo opterećenje | zelena |  |
| Srednje opterećenje | plava |  |
| Veliko opterećenje | crvena |  |
| Jako veliko opterećenje | žuta |  |

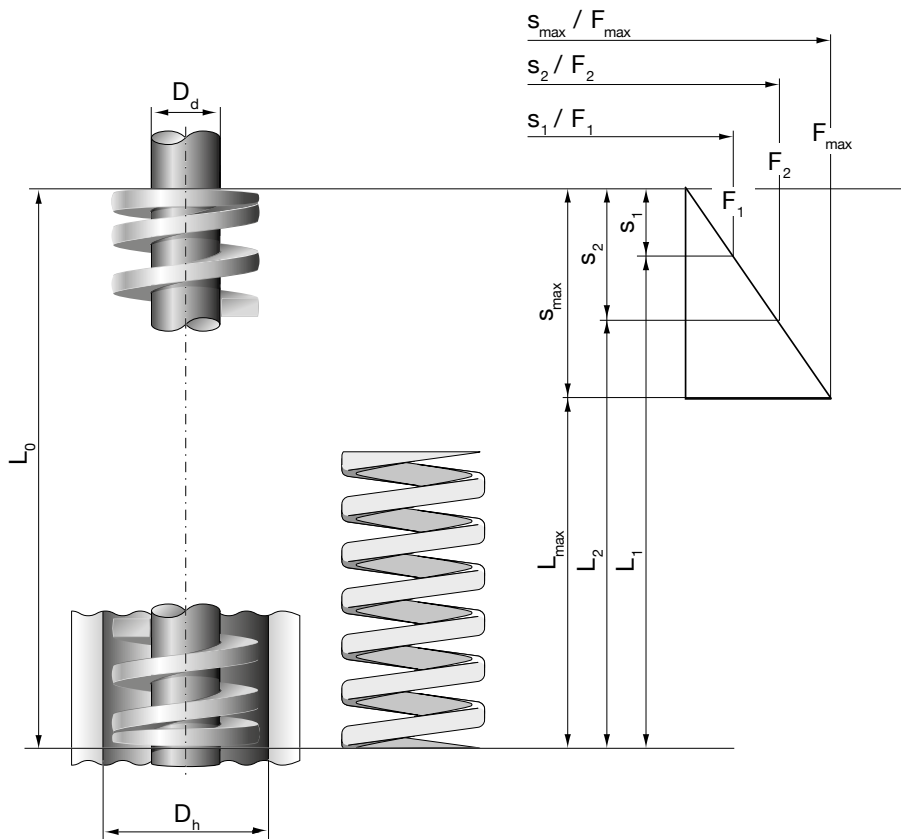
| Opterećenje / vek trajanja: | |
|-----------------------------|---|
| F_1 | Opterećenje za duži vek trajanja |
| F_2 | Opterećenje za srednji vek trajanja |
| F_{max} | Maksimalno opterećenje pri kratkom veku trajanja |
| F_c | Opterećenje bloka |
| V | Prednaprezanje u N (po mogućstvu izabrati visoko) |
| s | Izabrani hod opruge u mm, (po mogućstvu izabrati što manje) |



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| Oznaka | Jedinica | Naziv |
|-----------|-------------------|---|
| D_d | mm | Prečnik radnog trna |
| D_h | mm | Prečnik radne hilzne |
| E | N/mm ² | Modul elastičnosti |
| F | N | Sila opruge |
| F_1 | N | Sila opruge s_1 |
| F_2 | N | Sila opruge s_2 |
| F_{max} | N | Sila opruge s_{max} |
| F_c | N | Teorijska sila opruge u skladu sa dužinom bloka L_c |
| L | mm | Dužina opruge |
| L_1 | mm | Dužina opruge s_1 |
| L_2 | mm | Dužina opruge s_2 |
| L_{max} | mm | Dužina opruge s_{max} |

| Oznaka | Jedinica | Naziv |
|-----------|----------|---|
| L_b | mm | Dužina opruge F_b |
| L_n | mm | Dozvoljena dužina opruge |
| M | g | Masa opruge |
| R | N/mm | Krutost opruge |
| s | mm | Hod opruge |
| s_1 | mm | Hod opruge F_1 |
| s_2 | mm | Hod opruge F_2 |
| s_{max} | mm | Hod opruge F_{max} |
| s_c | N | Teorijska sila opruge u skladu sa dužinom L_c |
| s_n | mm | Hod, radni hod |
| s_h | mm | Hod, radni hod |

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|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|----------|--------------|--------|--------|---------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | | | | |
| 10,00 | 5,00 | 25,0 | 10,0 | 6,5 | 65,0 | 7,7 | 77,0 | 10,3 | 103,0 | Zelena | SL10x25 | | | |
| | | 32,0 | 8,5 | 8,3 | 70,5 | 9,9 | 84,1 | 13,1 | 111,3 | | SL10x32 | | | |
| | | 38,0 | 6,8 | 9,9 | 67,3 | 11,7 | 79,6 | 15,6 | 106,1 | | SL10x38 | | | |
| | | 44,0 | 6,0 | 11,4 | 69,0 | 13,6 | 81,6 | 18,0 | 108,0 | | SL10x44 | | | |
| | | 51,0 | 5,0 | 13,3 | 66,5 | 15,8 | 79,0 | 20,9 | 104,5 | | SL10x51 | | | |
| | | 64,0 | 4,3 | 16,6 | 71,4 | 19,8 | 85,1 | 26,0 | 111,8 | | SL10x64 | | | |
| | | 76,0 | 3,2 | 19,8 | 63,4 | 23,5 | 75,2 | 31,2 | 99,8 | | SL10x76 | | | |
| | | 305,0 | 1,1 | 79,3 | 87,2 | 94,5 | 103,9 | 125,0 | 137,5 | | SL10x305 | | | |
| | | 12,50 | 6,30 | 25,0 | 17,9 | 6,5 | 116,3 | 7,7 | 137,8 | | 10,3 | 184,4 | Zelena | SL13x25 |
| | | | | 32,0 | 16,4 | 8,3 | 136,1 | 9,9 | 162,4 | | 13,1 | 214,8 | | SL13x32 |
| 38,0 | 13,6 | | | 9,9 | 134,6 | 11,7 | 159,1 | 15,6 | 212,2 | SL13x38 | | | | |
| 44,0 | 12,1 | | | 11,5 | 139,1 | 13,6 | 164,6 | 18,0 | 217,8 | SL13x44 | | | | |
| 51,0 | 11,4 | | | 13,3 | 151,6 | 15,8 | 180,1 | 20,9 | 238,3 | SL13x51 | | | | |
| 64,0 | 9,3 | | | 16,6 | 154,4 | 19,8 | 184,1 | 26,3 | 244,6 | SL13x64 | | | | |
| 76,0 | 7,1 | | | 19,8 | 140,6 | 23,5 | 166,8 | 31,2 | 221,5 | SL13x76 | | | | |
| 89,0 | 5,4 | | | 23,1 | 124,7 | 27,6 | 149,0 | 36,5 | 197,1 | SL13x89 | | | | |
| 305,0 | 1,4 | | | 79,3 | 111,0 | 94,5 | 132,3 | 125,0 | 175,0 | SL13x305 | | | | |
| 16,00 | 8,00 | | | 25,0 | 23,4 | 6,5 | 152,1 | 7,7 | 180,2 | 10,3 | 241,0 | Zelena | | SL16x25 |
| | | 32,0 | 22,9 | 8,3 | 190,1 | 9,9 | 226,7 | 13,1 | 300,0 | SL16x32 | | | | |
| | | 38,0 | 19,3 | 9,9 | 191,1 | 11,7 | 225,8 | 15,6 | 301,1 | SL16x38 | | | | |
| | | 44,0 | 17,1 | 11,5 | 196,6 | 13,6 | 232,6 | 18,0 | 307,8 | SL16x44 | | | | |
| | | 51,0 | 15,7 | 13,3 | 208,8 | 15,8 | 248,1 | 20,9 | 328,1 | SL16x51 | | | | |
| | | 64,0 | 10,7 | 16,6 | 177,6 | 19,8 | 211,9 | 26,3 | 281,4 | SL16x64 | | | | |
| | | 76,0 | 10,0 | 19,8 | 198,0 | 23,5 | 235,0 | 31,2 | 312,0 | SL16x76 | | | | |
| | | 89,0 | 8,6 | 23,1 | 198,7 | 27,6 | 237,4 | 36,5 | 313,9 | SL16x89 | | | | |
| | | 102,0 | 7,8 | 26,5 | 206,7 | 31,6 | 246,5 | 41,8 | 326,0 | SL16x102 | | | | |
| | | 305,0 | 2,5 | 79,3 | 198,2 | 94,5 | 236,2 | 125,0 | 312,5 | SL16x305 | | | | |
| 20,00 | 10,00 | 25,0 | 55,8 | 6,5 | 362,7 | 7,7 | 429,7 | 10,2 | 569,2 | Zelena | SL20x25 | | | |
| | | 32,0 | 45,0 | 8,3 | 373,5 | 9,9 | 445,5 | 12,5 | 562,5 | | SL20x32 | | | |
| | | 38,0 | 33,3 | 9,9 | 329,7 | 11,7 | 389,6 | 15,0 | 499,5 | | SL20x38 | | | |
| | | 44,0 | 30,0 | 11,5 | 345,0 | 13,6 | 408,0 | 18,0 | 540,0 | | SL20x44 | | | |
| | | 51,0 | 24,5 | 13,3 | 325,8 | 15,8 | 387,1 | 20,0 | 490,0 | | SL20x51 | | | |
| | | 64,0 | 20,0 | 16,6 | 332,0 | 19,8 | 396,0 | 25,0 | 500,0 | | SL20x64 | | | |
| | | 76,0 | 16,0 | 19,8 | 316,8 | 23,5 | 376,0 | 30,0 | 480,0 | | SL20x76 | | | |
| | | 89,0 | 14,0 | 23,1 | 323,4 | 27,6 | 386,4 | 35,0 | 490,0 | | SL20x89 | | | |
| | | 102,0 | 12,0 | 26,5 | 318,0 | 31,6 | 379,2 | 41,0 | 492,0 | | SL20x102 | | | |
| | | 115,0 | 10,9 | 30,0 | 327,0 | 35,6 | 388,0 | 46,0 | 501,4 | | SL20x115 | | | |
| | | 127,0 | 9,5 | 33,0 | 313,5 | 39,4 | 374,3 | 51,0 | 484,5 | | SL20x127 | | | |
| | | 139,0 | 8,4 | 36,1 | 303,2 | 43,1 | 362,0 | 56,0 | 470,4 | | SL20x139 | | | |
| | | 152,0 | 7,5 | 39,5 | 296,2 | 47,1 | 353,3 | 61,0 | 457,5 | | SL20x152 | | | |
| | | 305,0 | 4,0 | 79,3 | 317,2 | 94,5 | 378,0 | 122,0 | 488,0 | | SL20x305 | | | |
| 25,00 | 12,50 | 25,0 | 100,0 | 6,5 | 650,0 | 7,7 | 770,0 | 10,2 | 1020,0 | Zelena | SL26x25 | | | |
| | | 32,0 | 80,3 | 8,3 | 666,5 | 9,9 | 795,0 | 12,5 | 1003,8 | | SL26x32 | | | |
| | | 38,0 | 62,0 | 9,9 | 613,8 | 11,7 | 725,4 | 15,0 | 930,0 | | SL26x38 | | | |
| | | 44,0 | 52,9 | 11,5 | 608,3 | 13,6 | 719,4 | 18,0 | 952,2 | | SL26x44 | | | |
| | | 51,0 | 44,0 | 13,3 | 585,2 | 15,8 | 695,2 | 20,0 | 880,0 | | SL26x51 | | | |
| | | 64,0 | 35,2 | 16,6 | 584,3 | 19,8 | 697,0 | 25,0 | 880,0 | | SL26x64 | | | |
| | | 76,0 | 28,0 | 19,8 | 554,4 | 23,5 | 658,0 | 30,0 | 840,0 | | SL26x76 | | | |
| | | 89,0 | 24,0 | 23,1 | 554,4 | 27,6 | 662,4 | 35,0 | 840,0 | | SL26x89 | | | |
| | | 102,0 | 21,1 | 26,5 | 559,1 | 31,6 | 666,8 | 41,0 | 865,1 | | SL26x102 | | | |
| | | 115,0 | 18,7 | 30,0 | 561,0 | 35,6 | 665,7 | 46,0 | 860,2 | | SL26x115 | | | |
| | | 127,0 | 16,7 | 33,0 | 551,1 | 39,4 | 658,0 | 51,0 | 851,7 | | SL26x127 | | | |
| | | 139,0 | 15,3 | 36,1 | 552,3 | 43,1 | 659,4 | 56,0 | 856,8 | | SL26x139 | | | |
| | | 152,0 | 14,0 | 39,5 | 553,0 | 47,1 | 659,4 | 61,0 | 854,0 | | SL26x152 | | | |
| | | 178,0 | 12,5 | 46,3 | 578,7 | 55,2 | 690,0 | 71,0 | 887,5 | | SL26x178 | | | |
| | | 203,0 | 10,4 | 52,8 | 549,1 | 62,9 | 654,2 | 81,0 | 842,4 | | SL26x203 | | | |
| | | 305,0 | 7,0 | 79,3 | 551,9 | 94,5 | 657,7 | 122,0 | 849,1 | | SL26x305 | | | |



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|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|----------|--------------|----------|---------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | | | |
| 32,00 | 16,00 | 38,0 | 94,0 | 9,9 | 930,6 | 11,7 | 1099,8 | 15,0 | 1410,0 | Zelena | SL32x38 | | |
| | | 44,0 | 79,5 | 11,5 | 914,3 | 13,6 | 1081,2 | 18,0 | 1431,0 | | SL32x44 | | |
| | | 51,0 | 67,0 | 13,3 | 891,1 | 15,8 | 1058,6 | 20,0 | 1340,0 | | SL32x51 | | |
| | | 64,0 | 53,0 | 16,6 | 879,8 | 19,8 | 1049,4 | 25,0 | 1325,0 | | SL32x64 | | |
| | | 76,0 | 44,0 | 19,8 | 871,2 | 23,5 | 1034,0 | 30,0 | 1320,0 | | SL32x76 | | |
| | | 89,0 | 37,2 | 23,1 | 859,3 | 27,6 | 1026,7 | 35,0 | 1302,0 | | SL32x89 | | |
| | | 102,0 | 32,0 | 26,5 | 848,0 | 31,6 | 1011,2 | 41,0 | 1312,0 | | SL32x102 | | |
| | | 115,0 | 29,0 | 30,0 | 870,0 | 35,6 | 1032,4 | 46,0 | 1334,0 | | SL32x115 | | |
| | | 127,0 | 25,0 | 33,0 | 825,0 | 39,4 | 985,0 | 51,0 | 1275,0 | | SL32x127 | | |
| | | 139,0 | 23,0 | 36,1 | 830,3 | 43,1 | 991,3 | 56,0 | 1288,0 | | SL32x139 | | |
| | | 152,0 | 21,5 | 39,5 | 849,3 | 47,1 | 1012,6 | 61,0 | 1311,5 | | SL32x152 | | |
| | | 178,0 | 18,2 | 46,3 | 842,7 | 55,2 | 1004,6 | 71,0 | 1292,2 | | SL32x178 | | |
| | | 203,0 | 15,8 | 52,8 | 834,2 | 62,9 | 993,8 | 81,0 | 1279,8 | | SL32x203 | | |
| | | 254,0 | 12,5 | 66,0 | 825,0 | 78,7 | 983,7 | 102,0 | 1275,0 | | SL32x254 | | |
| | 305,0 | 10,3 | 79,3 | 816,8 | 94,5 | 973,4 | 122,0 | 1256,6 | | SL32x305 | | | |
| 40,00 | 20,00 | 51,0 | 92,0 | 13,3 | 1223,6 | 15,8 | 1453,6 | 20,0 | 1840,0 | Zelena | SL40x51 | | |
| | | 64,0 | 73,0 | 16,6 | 1211,8 | 19,8 | 1445,4 | 25,0 | 1825,0 | | SL40x64 | | |
| | | 76,0 | 63,0 | 19,8 | 1247,4 | 23,5 | 1480,5 | 30,0 | 1890,0 | | SL40x76 | | |
| | | 89,0 | 51,0 | 23,1 | 1178,1 | 27,6 | 1407,6 | 35,0 | 1785,0 | | SL40x89 | | |
| | | 102,0 | 43,0 | 26,5 | 1139,5 | 31,6 | 1358,8 | 41,0 | 1763,0 | | SL40x102 | | |
| | | 115,0 | 39,6 | 30,0 | 1188,0 | 35,6 | 1409,8 | 46,0 | 1821,6 | | SL40x115 | | |
| | | 127,0 | 37,0 | 33,0 | 1221,0 | 39,4 | 1457,8 | 51,0 | 1887,0 | | SL40x127 | | |
| | | 139,0 | 32,0 | 36,1 | 1155,2 | 43,1 | 1379,2 | 56,0 | 1792,0 | | SL40x139 | | |
| | | 152,0 | 28,0 | 39,5 | 1106,0 | 47,1 | 1318,8 | 61,0 | 1708,0 | | SL40x152 | | |
| | | 178,0 | 25,2 | 46,3 | 1166,8 | 55,2 | 1391,0 | 71,0 | 1789,2 | | SL40x178 | | |
| | | 203,0 | 22,7 | 52,8 | 1198,6 | 62,9 | 1427,8 | 81,0 | 1838,7 | | SL40x203 | | |
| | | 254,0 | 17,0 | 66,0 | 1122,0 | 78,7 | 1337,9 | 102,0 | 1734,0 | | SL40x254 | | |
| | | | 305,0 | 14,8 | 79,3 | 1173,6 | 94,5 | 1398,6 | 122,0 | 1805,6 | | SL40x305 | |
| | | 50,00 | 25,00 | 64,0 | 156,0 | 16,6 | 2589,6 | 19,8 | 3088,8 | 25,0 | 3900,0 | Zelena | SL51x64 |
| 76,0 | 125,0 | | | 19,8 | 2475,0 | 23,5 | 2937,5 | 30,0 | 3750,0 | | SL51x76 | | |
| 89,0 | 109,0 | | | 23,1 | 2517,9 | 27,6 | 3008,4 | 35,0 | 3815,0 | | SL51x89 | | |
| 102,0 | 94,0 | | | 26,5 | 2491,0 | 31,6 | 2970,4 | 41,0 | 3854,0 | | SL51x102 | | |
| 115,0 | 81,0 | | | 30,0 | 2430,0 | 35,6 | 2883,6 | 46,0 | 3726,0 | | SL51x115 | | |
| 127,0 | 71,0 | | | 33,0 | 2343,0 | 39,4 | 2797,4 | 51,0 | 3621,0 | | SL51x127 | | |
| 139,0 | 66,5 | | | 36,1 | 2400,7 | 43,1 | 2866,2 | 56,0 | 3724,0 | | SL51x139 | | |
| 152,0 | 60,0 | | | 39,5 | 2370,0 | 47,1 | 2826,0 | 61,0 | 3660,0 | | SL51x152 | | |
| 178,0 | 52,0 | | | 46,3 | 2407,6 | 55,2 | 2870,4 | 71,0 | 3692,0 | | SL51x178 | | |
| 203,0 | 44,0 | | | 52,8 | 2323,2 | 62,9 | 2767,6 | 81,0 | 3564,0 | | SL51x203 | | |
| 254,0 | 35,0 | | | 66,0 | 2310,0 | 78,7 | 2554,5 | 102,0 | 3570,0 | | SL51x254 | | |
| | 305,0 | | | 28,5 | 79,3 | 2260,1 | 94,5 | 2693,3 | 122,0 | 3477,0 | | SL51x305 | |
| 63,00 | 38,00 | | | 76,0 | 189,0 | 19,8 | 3742,2 | 23,5 | 4441,5 | 30,0 | 5670,0 | Zelena | SL63x76 |
| | | | | 89,0 | 158,0 | 23,1 | 3649,8 | 27,6 | 4360,8 | 35,0 | 5530,0 | | SL63x89 |
| | | 102,0 | 131,0 | 26,5 | 3471,5 | 31,6 | 4139,6 | 41,0 | 5371,0 | | SL63x102 | | |
| | | 115,0 | 116,0 | 30,0 | 3480,0 | 35,6 | 4129,6 | 46,0 | 5336,0 | | SL63x115 | | |
| | | 127,0 | 103,0 | 33,0 | 3399,0 | 39,4 | 4058,2 | 51,0 | 5253,0 | | SL63x127 | | |
| | | 152,0 | 84,3 | 39,5 | 3329,9 | 47,1 | 3970,5 | 61,0 | 5142,3 | | SL63x152 | | |
| | | 178,0 | 71,5 | 46,3 | 3310,5 | 55,2 | 3946,8 | 71,0 | 5076,5 | | SL63x178 | | |
| | | 203,0 | 61,7 | 52,8 | 3257,8 | 62,9 | 3880,9 | 81,0 | 4997,7 | | SL63x203 | | |
| | | 254,0 | 47,0 | 66,0 | 3102,0 | 78,7 | 3698,9 | 102,0 | 4794,0 | | SL63x254 | | |
| | | | 305,0 | 38,2 | 79,3 | 3029,3 | 94,5 | 3609,9 | 122,0 | 4660,4 | | SL63x305 | |

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| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | Boja | Broj artikla |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|---------|--------------|
| D _n mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | |
| 10,00 | 5,00 | 25,0 | 16,0 | 6,5 | 104,0 | 7,7 | 123,2 | 9,5 | 152,0 | Plava | S10x25 |
| | | 32,0 | 13,0 | 8,3 | 107,9 | 9,9 | 128,7 | 12,2 | 158,6 | | S10x32 |
| | | 38,0 | 11,9 | 9,9 | 117,8 | 11,7 | 139,2 | 14,2 | 171,4 | | S10x38 |
| | | 44,0 | 10,3 | 11,5 | 118,5 | 13,6 | 140,1 | 16,7 | 172,0 | | S10x44 |
| | | 51,0 | 8,9 | 13,3 | 118,4 | 15,8 | 140,6 | 19,4 | 172,7 | | S10x51 |
| | | 64,0 | 7,5 | 16,6 | 124,5 | 19,8 | 148,5 | 24,3 | 182,3 | | S10x64 |
| | | 76,0 | 5,3 | 19,8 | 104,9 | 23,5 | 124,6 | 28,9 | 153,2 | | S10x76 |
| | | 305,0 | 1,6 | 79,3 | 126,9 | 94,5 | 151,2 | 116,0 | 185,6 | | S10x305 |
| | | 12,50 | 6,30 | 25,0 | 30,0 | 6,5 | 195,0 | 7,7 | 231,0 | | 9,5 |
| 32,0 | 24,8 | | | 8,3 | 205,8 | 9,9 | 245,5 | 12,2 | 302,6 | S13x32 | |
| 38,0 | 21,4 | | | 9,9 | 211,9 | 11,7 | 250,4 | 14,4 | 308,2 | S13x38 | |
| 44,0 | 18,5 | | | 11,5 | 212,8 | 13,6 | 251,6 | 16,7 | 309,0 | S13x44 | |
| 51,0 | 15,5 | | | 13,3 | 206,2 | 15,8 | 244,9 | 19,4 | 300,7 | S13x51 | |
| 64,0 | 12,1 | | | 16,6 | 200,9 | 19,8 | 239,6 | 24,3 | 294,0 | S13x64 | |
| 76,0 | 10,2 | | | 19,8 | 202,0 | 23,5 | 239,7 | 28,9 | 294,8 | S13x76 | |
| 89,0 | 8,4 | | | 23,1 | 194,0 | 27,6 | 231,8 | 33,8 | 283,9 | S13x89 | |
| 305,0 | 2,1 | | | 79,3 | 166,5 | 94,5 | 198,5 | 116,0 | 243,6 | S13x305 | |
| 16,00 | 8,00 | 25,0 | 49,4 | 6,5 | 321,1 | 7,7 | 380,4 | 9,5 | 469,3 | Plava | S16x25 |
| | | 32,0 | 37,1 | 8,3 | 307,9 | 9,9 | 367,3 | 12,2 | 452,6 | | S16x32 |
| | | 38,0 | 33,9 | 9,9 | 335,6 | 11,7 | 396,6 | 14,4 | 488,2 | | S16x38 |
| | | 44,0 | 30,0 | 11,5 | 345,0 | 13,6 | 408,0 | 16,7 | 501,0 | | S16x44 |
| | | 51,0 | 26,4 | 13,3 | 351,1 | 15,8 | 417,1 | 19,4 | 512,2 | | S16x51 |
| | | 64,0 | 20,5 | 16,6 | 340,3 | 19,8 | 405,9 | 24,3 | 498,2 | | S16x64 |
| | | 76,0 | 17,8 | 19,8 | 352,4 | 23,5 | 418,3 | 28,9 | 514,4 | | S16x76 |
| | | 89,0 | 15,2 | 23,1 | 351,1 | 27,6 | 419,5 | 33,8 | 513,8 | | S16x89 |
| | | 102,0 | 13,5 | 26,5 | 357,8 | 31,6 | 426,6 | 38,8 | 523,8 | | S16x102 |
| 305,0 | 4,8 | 79,3 | 380,6 | 94,5 | 453,6 | 116,0 | 556,8 | S16x305 | | | |
| 20,00 | 10,00 | 25,0 | 98,0 | 6,5 | 637,0 | 7,7 | 754,6 | 9,4 | 921,2 | Plava | S20x25 |
| | | 32,0 | 72,6 | 8,3 | 602,6 | 9,9 | 718,7 | 12,0 | 871,2 | | S20x32 |
| | | 38,0 | 56,0 | 9,9 | 545,4 | 11,7 | 655,2 | 14,0 | 784,0 | | S20x38 |
| | | 44,0 | 47,5 | 11,5 | 546,3 | 13,6 | 646,0 | 16,5 | 783,8 | | S20x44 |
| | | 51,0 | 41,7 | 13,3 | 554,6 | 15,8 | 658,9 | 19,0 | 792,3 | | S20x51 |
| | | 64,0 | 32,3 | 16,6 | 536,2 | 19,8 | 639,5 | 24,0 | 775,2 | | S20x64 |
| | | 76,0 | 25,1 | 19,8 | 497,0 | 23,5 | 589,0 | 28,0 | 702,8 | | S20x76 |
| | | 89,0 | 220,0 | 23,1 | 508,2 | 27,6 | 607,2 | 33,0 | 726,0 | | S20x89 |
| | | 102,0 | 19,8 | 26,5 | 524,7 | 31,6 | 625,7 | 38,0 | 752,4 | | S20x102 |
| | | 115,0 | 18,1 | 30,0 | 543,0 | 35,6 | 644,4 | 43,0 | 778,3 | | S20x115 |
| | | 127,0 | 16,6 | 33,0 | 547,8 | 39,4 | 654,0 | 48,0 | 796,8 | | S20x127 |
| | | 139,0 | 15,1 | 36,1 | 545,1 | 43,1 | 650,8 | 52,0 | 785,2 | | S20x139 |
| | | 152,0 | 13,1 | 39,5 | 519,4 | 47,1 | 619,4 | 57,0 | 749,6 | | S20x152 |
| | | 305,0 | 6,1 | 79,3 | 483,7 | 94,5 | 576,5 | 114,0 | 695,4 | | S20x305 |
| | | 25,00 | 12,50 | 25,0 | 147,0 | 6,5 | 955,5 | 7,7 | 1131,9 | | 9,4 |
| 32,0 | 118,0 | | | 8,3 | 979,4 | 9,9 | 1168,2 | 12,0 | 1416,0 | S26x32 | |
| 38,0 | 93,0 | | | 9,9 | 920,7 | 11,7 | 1088,1 | 14,0 | 1302,0 | S26x38 | |
| 44,0 | 80,8 | | | 11,5 | 929,2 | 13,6 | 1098,9 | 16,5 | 1333,2 | S26x44 | |
| 51,0 | 68,3 | | | 13,3 | 908,4 | 15,8 | 1079,1 | 19,0 | 1297,7 | S26x51 | |
| 64,0 | 53,0 | | | 16,6 | 879,8 | 19,8 | 1049,4 | 24,0 | 1272,0 | S26x64 | |
| 76,0 | 43,2 | | | 19,8 | 855,4 | 23,5 | 1015,2 | 28,0 | 1209,6 | S26x76 | |
| 89,0 | 38,2 | | | 23,1 | 882,4 | 27,6 | 1054,3 | 33,0 | 1260,6 | S26x89 | |
| 102,0 | 33,0 | | | 26,5 | 874,5 | 31,6 | 1042,8 | 38,0 | 1254,0 | S26x102 | |
| 115,0 | 28,0 | | | 30,0 | 840,0 | 35,6 | 996,8 | 43,0 | 1204,0 | S26x115 | |
| 127,0 | 25,9 | | | 33,0 | 854,7 | 39,4 | 1020,5 | 48,0 | 1243,2 | S26x127 | |
| 139,0 | 23,2 | | | 36,1 | 837,5 | 43,1 | 999,9 | 52,0 | 1206,4 | S26x139 | |
| 152,0 | 20,8 | | | 39,5 | 821,6 | 47,1 | 979,7 | 57,0 | 1185,6 | S26x152 | |
| 178,0 | 17,8 | | | 46,3 | 824,1 | 55,2 | 982,6 | 67,0 | 1192,6 | S26x178 | |
| 203,0 | 15,8 | | | 52,8 | 834,2 | 62,9 | 993,8 | 76,0 | 1200,8 | S26x203 | |
| 305,0 | 10,2 | 79,3 | 808,9 | 94,5 | 963,9 | 114,0 | 1162,8 | S26x305 | | | |



Sistemske opruge

HENNLICH d.o.o. Beograd

| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | Boja | Broj artikla |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|---------|--------------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | |
| 32,00 | 16,00 | 38,0 | 185,0 | 9,9 | 1831,5 | 11,7 | 2164,5 | 14,0 | 2590,0 | Plava | S32x38 |
| | | 44,0 | 158,0 | 11,5 | 1817,0 | 13,6 | 2148,8 | 16,5 | 2607,0 | | S32x44 |
| | | 51,0 | 134,0 | 13,3 | 1782,2 | 15,8 | 2117,2 | 19,0 | 2546,0 | | S32x51 |
| | | 64,0 | 99,0 | 16,6 | 1643,4 | 19,8 | 1960,2 | 24,0 | 2376,0 | | S32x64 |
| | | 76,0 | 80,5 | 19,8 | 1593,9 | 23,5 | 1891,8 | 28,0 | 2254,0 | | S32x76 |
| | | 89,0 | 69,1 | 23,1 | 1596,2 | 27,6 | 1907,2 | 33,0 | 2280,3 | | S32x89 |
| | | 102,0 | 58,8 | 26,5 | 1558,2 | 31,6 | 1858,1 | 38,0 | 2234,4 | | S32x102 |
| | | 115,0 | 51,5 | 30,0 | 1545,0 | 35,6 | 1833,4 | 43,0 | 2214,5 | | S32x115 |
| | | 127,0 | 44,8 | 33,0 | 1478,4 | 39,4 | 1765,1 | 48,0 | 2150,4 | | S32x127 |
| | | 139,0 | 42,3 | 36,1 | 1527,0 | 43,1 | 1823,1 | 52,0 | 2199,6 | | S32x139 |
| | | 152,0 | 37,8 | 39,5 | 1493,1 | 47,1 | 1780,4 | 57,0 | 2154,6 | | S32x152 |
| | | 178,0 | 32,5 | 46,3 | 1504,8 | 55,2 | 1794,0 | 67,0 | 2177,5 | | S32x178 |
| | | 203,0 | 28,9 | 52,8 | 1525,9 | 62,9 | 1817,8 | 76,0 | 2196,4 | | S32x203 |
| | | 254,0 | 21,4 | 66,0 | 1412,4 | 78,7 | 1684,2 | 95,0 | 2033,0 | | S32x254 |
| 305,0 | 18,3 | 79,3 | 1451,2 | 94,5 | 1729,4 | 114,0 | 2086,2 | S32x305 | | | |
| 40,00 | 20,00 | 51,0 | 181,6 | 13,3 | 2415,3 | 15,8 | 2869,3 | 19,0 | 3450,4 | Plava | S40x51 |
| | | 64,0 | 140,0 | 16,6 | 2324,0 | 19,8 | 2772,0 | 24,0 | 3360,0 | | S40x64 |
| | | 76,0 | 108,0 | 19,8 | 2138,4 | 23,5 | 2538,0 | 28,0 | 3024,0 | | S40x76 |
| | | 89,0 | 90,7 | 23,1 | 2095,2 | 27,6 | 2503,3 | 33,0 | 2993,1 | | S40x89 |
| | | 102,0 | 81,0 | 26,5 | 2146,5 | 31,6 | 2559,6 | 38,0 | 3078,0 | | S40x102 |
| | | 115,0 | 71,8 | 30,0 | 2154,0 | 35,6 | 2556,1 | 43,0 | 3087,4 | | S40x115 |
| | | 127,0 | 62,7 | 33,0 | 2069,1 | 39,4 | 2470,4 | 48,0 | 3009,6 | | S40x127 |
| | | 139,0 | 57,5 | 36,1 | 2075,8 | 43,1 | 2478,3 | 52,0 | 2990,0 | | S40x139 |
| | | 152,0 | 51,6 | 39,5 | 2038,2 | 47,1 | 2430,4 | 57,0 | 2941,2 | | S40x152 |
| | | 178,0 | 44,1 | 46,3 | 2041,8 | 55,2 | 2434,3 | 67,0 | 2954,7 | | S40x178 |
| | | 203,0 | 36,7 | 52,8 | 1937,8 | 62,9 | 2308,4 | 76,0 | 2789,2 | | S40x203 |
| | | 254,0 | 30,1 | 66,0 | 1986,6 | 78,7 | 2368,9 | 95,0 | 2859,5 | | S40x254 |
| | | 305,0 | 24,6 | 79,3 | 1950,8 | 94,5 | 2324,7 | 114,0 | 2804,4 | | S40x305 |
| | | 50,00 | 25,00 | 64,0 | 209,0 | 16,6 | 3469,4 | 19,8 | 4138,2 | | 24,0 |
| 76,0 | 168,0 | | | 19,8 | 3326,4 | 23,5 | 3948,0 | 28,0 | 4704,0 | S51x76 | |
| 89,0 | 140,0 | | | 23,1 | 3234,0 | 27,6 | 3864,0 | 33,0 | 4620,0 | S51x89 | |
| 102,0 | 119,0 | | | 26,5 | 3153,5 | 31,6 | 3760,4 | 38,0 | 4522,0 | S51x102 | |
| 115,0 | 106,0 | | | 30,0 | 3180,0 | 35,6 | 3773,6 | 43,0 | 4558,0 | S51x115 | |
| 127,0 | 97,0 | | | 33,0 | 3201,0 | 39,4 | 3821,8 | 48,0 | 4656,0 | S51x127 | |
| 139,0 | 87,0 | | | 36,1 | 3140,7 | 43,1 | 3749,7 | 52,0 | 4524,0 | S51x139 | |
| 152,0 | 80,0 | | | 39,5 | 3160,0 | 47,1 | 3768,0 | 57,0 | 4560,0 | S51x152 | |
| 178,0 | 69,5 | | | 46,3 | 3217,9 | 55,2 | 3836,4 | 67,0 | 4656,5 | S51x178 | |
| 203,0 | 59,8 | | | 52,8 | 3157,4 | 62,9 | 3761,4 | 76,0 | 4544,8 | S51x203 | |
| 229,0 | 50,9 | | | 59,5 | 3028,6 | 71,0 | 3613,9 | 86,0 | 4377,4 | S51x229 | |
| 254,0 | 43,9 | | | 66,0 | 2897,4 | 78,7 | 3454,9 | 95,0 | 4170,5 | S51x254 | |
| 305,0 | 38,6 | | | 79,3 | 3061,0 | 94,5 | 3647,7 | 114,0 | 4400,4 | S51x305 | |
| 63,00 | 38,00 | | | 76,0 | 312,0 | 198,0 | 6177,6 | 23,5 | 7332,0 | 28,0 | 8736,0 |
| | | 89,0 | 260,0 | 23,1 | 6006,0 | 27,6 | 7176,0 | 33,0 | 8580,0 | S63x89 | |
| | | 102,0 | 221,0 | 26,5 | 5856,5 | 31,6 | 6983,6 | 38,0 | 8398,0 | S63x102 | |
| | | 115,0 | 187,0 | 30,0 | 5610,0 | 35,6 | 6657,2 | 43,0 | 8041,0 | S63x115 | |
| | | 127,0 | 168,0 | 33,0 | 5544,0 | 39,4 | 6619,2 | 48,0 | 8064,0 | S63x127 | |
| | | 152,0 | 136,0 | 39,5 | 5372,0 | 47,1 | 6405,6 | 57,0 | 7752,0 | S63x152 | |
| | | 178,0 | 114,0 | 46,3 | 5278,2 | 55,2 | 6292,8 | 67,0 | 7638,0 | S63x178 | |
| | | 203,0 | 100,0 | 52,8 | 5280,0 | 62,9 | 6290,0 | 76,0 | 7600,0 | S63x203 | |
| | | 229,0 | 89,2 | 59,5 | 5307,4 | 71,0 | 6333,2 | 86,0 | 7671,2 | S63x229 | |
| | | 254,0 | 78,4 | 66,0 | 5174,4 | 78,7 | 6170,1 | 95,0 | 7448,0 | S63x254 | |
| 305,0 | 64,7 | 79,3 | 5130,7 | 94,5 | 6114,2 | 114,0 | 7375,8 | S63x305 | | | |

Sistemske opruge

HENNLICH d.o.o. Beograd

| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | Boja | Broj artikla | | | |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|----------|--------------|--------|--------|---------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | | | | |
| 10,00 | 5,00 | 25,0 | 22,1 | 5,3 | 117,1 | 6,5 | 143,7 | 7,5 | 165,8 | Crvena | HL10x25 | | | |
| | | 32,0 | 17,5 | 6,7 | 117,3 | 8,3 | 145,3 | 9,6 | 168,0 | | HL10x32 | | | |
| | | 38,0 | 17,1 | 8,0 | 136,8 | 9,9 | 169,3 | 11,4 | 194,9 | | HL10x38 | | | |
| | | 44,0 | 15,0 | 9,2 | 138,0 | 11,5 | 172,5 | 13,2 | 198,0 | | HL10x44 | | | |
| | | 51,0 | 12,8 | 10,7 | 137,0 | 13,3 | 170,2 | 15,3 | 195,8 | | HL10x51 | | | |
| | | 64,0 | 10,7 | 13,4 | 143,4 | 16,6 | 177,6 | 19,2 | 205,4 | | HL10x64 | | | |
| | | 76,0 | 7,5 | 16,0 | 120,0 | 19,8 | 148,5 | 22,8 | 171,0 | | HL10x76 | | | |
| | | 305,0 | 2,1 | 64,0 | 134,0 | 79,3 | 166,5 | 91,5 | 192,2 | | HL10x305 | | | |
| | | 12,50 | 6,30 | 25,0 | 42,1 | 5,3 | 223,1 | 6,5 | 273,7 | | 7,5 | 315,8 | Crvena | HL13x25 |
| | | | | 32,0 | 33,2 | 6,7 | 222,4 | 8,3 | 275,6 | | 9,6 | 318,7 | | HL13x32 |
| 38,0 | 29,3 | | | 8,0 | 234,4 | 9,9 | 290,1 | 11,4 | 334,0 | HL13x38 | | | | |
| 44,0 | 24,6 | | | 9,2 | 226,3 | 11,5 | 282,9 | 13,2 | 324,7 | HL13x44 | | | | |
| 51,0 | 19,6 | | | 10,7 | 209,7 | 13,3 | 260,7 | 15,3 | 300,0 | HL13x51 | | | | |
| 64,0 | 15,0 | | | 13,4 | 201,0 | 16,6 | 249,0 | 19,2 | 288,0 | HL13x64 | | | | |
| 76,0 | 13,2 | | | 16,0 | 211,2 | 19,8 | 261,4 | 22,8 | 301,0 | HL13x76 | | | | |
| 89,0 | 11,4 | | | 18,7 | 213,2 | 23,1 | 263,3 | 26,7 | 304,4 | HL13x89 | | | | |
| 305,0 | 2,8 | | | 64,0 | 179,2 | 79,3 | 222,0 | 91,5 | 256,2 | HL13x305 | | | | |
| 16,00 | 8,00 | | | 25,0 | 75,7 | 5,3 | 401,2 | 6,5 | 492,1 | 7,5 | 567,8 | Crvena | | HL16x25 |
| | | 32,0 | 52,8 | 6,7 | 353,8 | 8,3 | 438,2 | 9,6 | 506,9 | HL16x32 | | | | |
| | | 38,0 | 48,5 | 8,0 | 388,0 | 9,9 | 480,2 | 11,4 | 552,9 | HL16x38 | | | | |
| | | 44,0 | 42,8 | 9,2 | 393,8 | 11,5 | 492,2 | 13,2 | 565,0 | HL16x44 | | | | |
| | | 51,0 | 37,1 | 10,7 | 397,0 | 13,3 | 493,4 | 15,3 | 567,6 | HL16x51 | | | | |
| | | 64,0 | 30,3 | 13,4 | 406,0 | 16,6 | 503,0 | 19,2 | 582,0 | HL16x64 | | | | |
| | | 76,0 | 25,7 | 16,0 | 411,2 | 19,8 | 509,0 | 22,8 | 586,0 | HL16x76 | | | | |
| | | 89,0 | 21,7 | 18,7 | 405,8 | 23,1 | 501,3 | 26,7 | 579,4 | HL16x89 | | | | |
| | | 102,0 | 19,3 | 21,7 | 413,0 | 26,5 | 511,5 | 30,6 | 590,6 | HL16x102 | | | | |
| | | 305,0 | 7,1 | 64,0 | 454,4 | 79,3 | 563,0 | 91,5 | 649,7 | HL16x305 | | | | |
| 20,00 | 10,00 | 25,0 | 216,0 | 5,3 | 1144,8 | 6,5 | 1404,0 | 7,5 | 1620,0 | Crvena | HL20x25 | | | |
| | | 32,0 | 168,0 | 6,7 | 1125,6 | 8,3 | 1394,4 | 9,6 | 1612,8 | | HL20x32 | | | |
| | | 38,0 | 129,0 | 8,0 | 1032,0 | 9,9 | 1277,1 | 11,0 | 1419,0 | | HL20x38 | | | |
| | | 44,0 | 112,0 | 9,2 | 1030,4 | 11,5 | 1288,0 | 13,0 | 1456,0 | | HL20x44 | | | |
| | | 51,0 | 94,0 | 10,7 | 1005,8 | 13,3 | 1250,2 | 15,0 | 1410,0 | | HL20x51 | | | |
| | | 64,0 | 72,1 | 13,4 | 966,1 | 16,6 | 1196,9 | 19,0 | 1369,9 | | HL20x64 | | | |
| | | 76,0 | 59,7 | 16,0 | 955,2 | 19,8 | 1182,1 | 23,0 | 1373,1 | | HL20x76 | | | |
| | | 89,0 | 50,5 | 18,7 | 944,4 | 23,1 | 1166,6 | 27,0 | 1363,5 | | HL20x89 | | | |
| | | 102,0 | 44,2 | 21,4 | 945,9 | 26,5 | 1171,3 | 31,0 | 1370,2 | | HL20x102 | | | |
| | | 115,0 | 38,4 | 24,2 | 929,3 | 30,0 | 1152,0 | 35,0 | 1344,0 | | HL20x115 | | | |
| | | 127,0 | 34,1 | 26,7 | 910,5 | 33,0 | 1125,3 | 38,0 | 1295,8 | | HL20x127 | | | |
| | | 139,0 | 31,0 | 29,2 | 905,2 | 36,1 | 1119,1 | 42,0 | 1302,0 | | HL20x139 | | | |
| | | 152,0 | 28,2 | 32,0 | 902,4 | 39,5 | 1113,9 | 46,0 | 1297,2 | | HL20x152 | | | |
| | | 305,0 | 15,0 | 64,0 | 960,0 | 79,3 | 1189,5 | 91,0 | 1365,0 | | HL20x305 | | | |
| | | 25,00 | 12,50 | 25,0 | 375,0 | 5,3 | 1987,5 | 6,5 | 2437,5 | | 7,5 | 2812,5 | Crvena | HL26x25 |
| 32,0 | 297,0 | | | 6,7 | 1989,9 | 8,3 | 2465,1 | 9,6 | 2851,2 | HL26x32 | | | | |
| 38,0 | 219,0 | | | 8,0 | 1752,0 | 9,9 | 2168,1 | 11,0 | 2409,0 | HL26x38 | | | | |
| 44,0 | 187,0 | | | 9,2 | 1720,4 | 11,5 | 2150,5 | 13,0 | 2431,0 | HL26x44 | | | | |
| 51,0 | 156,0 | | | 10,7 | 1669,2 | 13,3 | 2074,8 | 15,0 | 2340,0 | HL26x51 | | | | |
| 64,0 | 123,0 | | | 13,4 | 1648,2 | 16,6 | 2041,8 | 19,0 | 2337,0 | HL26x64 | | | | |
| 76,0 | 99,0 | | | 16,0 | 1584,0 | 19,8 | 1960,2 | 23,0 | 2277,0 | HL26x76 | | | | |
| 89,0 | 84,0 | | | 18,7 | 1570,8 | 23,1 | 1940,4 | 27,0 | 2268,0 | HL26x89 | | | | |
| 102,0 | 73,0 | | | 21,4 | 1562,2 | 26,5 | 1934,5 | 31,0 | 2263,0 | HL26x102 | | | | |
| 115,0 | 65,0 | | | 24,2 | 1573,0 | 30,0 | 1950,0 | 35,0 | 2275,0 | HL26x115 | | | | |
| 127,0 | 57,7 | | | 26,7 | 1540,6 | 33,0 | 1904,1 | 38,0 | 2192,6 | HL26x127 | | | | |
| 139,0 | 52,7 | | | 29,2 | 1538,8 | 36,1 | 1902,5 | 42,0 | 2213,4 | HL26x139 | | | | |
| 152,0 | 47,8 | | | 32,0 | 1529,6 | 39,5 | 1888,1 | 46,0 | 2198,8 | HL26x152 | | | | |
| 178,0 | 41,0 | | | 37,4 | 1533,4 | 46,3 | 1898,3 | 53,0 | 2173,0 | HL26x178 | | | | |
| 203,0 | 35,8 | | | 42,6 | 1525,1 | 52,8 | 1890,2 | 61,0 | 2183,8 | HL26x203 | | | | |
| 305,0 | 22,9 | 64,0 | 1465,6 | 79,3 | 1816,0 | 91,0 | 2083,9 | HL26x305 | | | | | | |



Sistemske opruge

HENNLICH d.o.o. Beograd

| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | Boja | Broj artikla | | | |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|----------|--------------|--------|--------|---------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | | | | |
| 32,00 | 16,00 | 38,0 | 388,0 | 8,0 | 3104,0 | 9,9 | 3841,2 | 11,0 | 4268,0 | Crvena | HL32x38 | | | |
| | | 44,0 | 324,0 | 9,2 | 2980,8 | 11,5 | 3726,0 | 13,0 | 4212,0 | | HL32x44 | | | |
| | | 51,0 | 272,0 | 10,7 | 2910,4 | 13,3 | 3617,6 | 15,0 | 4080,0 | | HL32x51 | | | |
| | | 64,0 | 212,0 | 13,4 | 2840,8 | 16,6 | 3519,2 | 19,0 | 4028,0 | | HL32x64 | | | |
| | | 76,0 | 172,0 | 16,0 | 2752,0 | 19,8 | 3405,6 | 23,0 | 3956,0 | | HL32x76 | | | |
| | | 89,0 | 141,0 | 18,7 | 2636,7 | 23,1 | 3257,1 | 27,0 | 3807,0 | | HL32x89 | | | |
| | | 102,0 | 122,0 | 21,4 | 2610,8 | 26,5 | 3233,0 | 31,0 | 3782,0 | | HL32x102 | | | |
| | | 115,0 | 107,0 | 24,2 | 2589,4 | 30,0 | 3210,0 | 35,0 | 3745,0 | | HL32x115 | | | |
| | | 127,0 | 93,0 | 26,7 | 2483,1 | 33,0 | 3069,0 | 38,0 | 3534,0 | | HL32x127 | | | |
| | | 139,0 | 86,0 | 29,2 | 2511,2 | 36,1 | 3104,6 | 42,0 | 3612,0 | | HL32x139 | | | |
| | | 152,0 | 58,0 | 32,0 | 2496,0 | 39,5 | 3081,0 | 46,0 | 3588,0 | | HL32x152 | | | |
| | | 178,0 | 67,2 | 37,4 | 2513,3 | 46,3 | 3111,4 | 53,0 | 3561,6 | | HL32x178 | | | |
| | | 203,0 | 59,1 | 42,6 | 2517,7 | 52,8 | 3120,5 | 61,0 | 3605,1 | | HL32x203 | | | |
| | | 254,0 | 46,4 | 53,3 | 2473,1 | 66,0 | 3062,4 | 76,0 | 3526,4 | | HL32x254 | | | |
| 305,0 | 38,0 | 64,0 | 2432,0 | 79,3 | 3013,4 | 91,0 | 3458,0 | HL32x305 | | | | | | |
| 40,00 | 20,00 | 51,0 | 350,0 | 10,7 | 3745,0 | 13,3 | 4655,0 | 15,0 | 5250,0 | Crvena | HL40x51 | | | |
| | | 64,0 | 269,0 | 13,4 | 3604,6 | 16,6 | 4465,4 | 19,0 | 5111,0 | | HL40x64 | | | |
| | | 76,0 | 219,0 | 16,0 | 3504,0 | 19,8 | 4336,2 | 23,0 | 5037,0 | | HL40x76 | | | |
| | | 89,0 | 190,0 | 18,7 | 3553,0 | 23,1 | 4389,0 | 27,0 | 5130,0 | | HL40x89 | | | |
| | | 102,0 | 163,0 | 21,4 | 3488,2 | 26,5 | 4319,5 | 31,0 | 5053,0 | | HL40x102 | | | |
| | | 115,0 | 142,0 | 24,2 | 3436,4 | 30,0 | 4260,0 | 35,0 | 4970,0 | | HL40x115 | | | |
| | | 127,0 | 128,0 | 26,7 | 3417,6 | 33,0 | 4224,0 | 38,0 | 4864,0 | | HL40x127 | | | |
| | | 139,0 | 115,0 | 29,2 | 3358,0 | 36,1 | 4151,5 | 42,0 | 4830,0 | | HL40x139 | | | |
| | | 152,0 | 105,0 | 32,0 | 3360,0 | 39,5 | 4147,5 | 46,0 | 4830,0 | | HL40x152 | | | |
| | | 178,0 | 89,0 | 37,4 | 3328,6 | 46,3 | 4120,7 | 53,0 | 4717,0 | | HL40x178 | | | |
| | | 203,0 | 77,0 | 42,6 | 3280,2 | 52,8 | 4065,6 | 61,0 | 4697,0 | | HL40x203 | | | |
| | | 254,0 | 61,0 | 53,3 | 3251,3 | 66,0 | 4026,0 | 76,0 | 4636,0 | | HL40x254 | | | |
| | | 305,0 | 51,0 | 64,0 | 3264,0 | 79,3 | 4044,3 | 91,0 | 4641,0 | | HL40x305 | | | |
| | | 50,00 | 25,00 | 64,0 | 413,0 | 13,4 | 5534,2 | 16,6 | 6855,8 | | 19,0 | 7847,0 | Crvena | HL51x64 |
| 76,0 | 339,0 | | | 16,0 | 5424,0 | 19,8 | 6712,2 | 23,0 | 7797,0 | HL51x76 | | | | |
| 89,0 | 288,0 | | | 18,7 | 5385,6 | 23,1 | 6652,8 | 27,0 | 7776,0 | HL51x89 | | | | |
| 102,0 | 245,0 | | | 21,4 | 5243,0 | 26,5 | 6492,5 | 31,0 | 7595,0 | HL51x102 | | | | |
| 115,0 | 215,0 | | | 24,2 | 5203,0 | 30,0 | 6450,0 | 35,0 | 7525,0 | HL51x115 | | | | |
| 127,0 | 192,0 | | | 26,7 | 5126,4 | 33,0 | 6336,0 | 38,0 | 7296,0 | HL51x127 | | | | |
| 139,0 | 168,0 | | | 29,2 | 4905,6 | 36,1 | 6064,8 | 42,0 | 7056,0 | HL51x139 | | | | |
| 152,0 | 154,0 | | | 32,0 | 4928,0 | 39,5 | 6083,0 | 46,0 | 7084,0 | HL51x152 | | | | |
| 178,0 | 134,0 | | | 37,4 | 5011,6 | 46,3 | 6204,2 | 53,0 | 7102,0 | HL51x178 | | | | |
| 203,0 | 117,0 | | | 42,6 | 4984,2 | 52,8 | 6177,6 | 61,0 | 7137,0 | HL51x203 | | | | |
| 254,0 | 89,0 | | | 53,3 | 4743,7 | 66,0 | 5874,0 | 76,0 | 6764,0 | HL51x254 | | | | |
| 305,0 | 73,0 | | | 64,0 | 4672,0 | 79,3 | 5788,9 | 91,0 | 6643,0 | HL51x305 | | | | |
| 63,00 | 38,00 | | | 76,0 | 618,0 | 15,2 | 9394,0 | 19,0 | 11742,0 | 22,8 | 14090,0 | Crvena | | HL63x76 |
| | | | | 89,0 | 515,0 | 17,8 | 9167,0 | 22,3 | 11485,0 | 26,7 | 13751,0 | | | HL63x89 |
| | | 102,0 | 438,0 | 20,4 | 8935,0 | 25,5 | 11169,0 | 30,6 | 13403,0 | HL63x102 | | | | |
| | | 115,0 | 370,0 | 23,0 | 8510,0 | 28,8 | 10656,0 | 34,5 | 12765,0 | HL63x115 | | | | |
| | | 127,0 | 333,0 | 25,4 | 8458,0 | 31,8 | 10589,0 | 38,1 | 12687,0 | HL63x127 | | | | |
| | | 152,0 | 269,0 | 30,4 | 8178,0 | 38,0 | 10222,0 | 45,6 | 12266,0 | HL63x152 | | | | |
| | | 178,0 | 226,0 | 35,6 | 8046,0 | 44,5 | 10057,0 | 53,4 | 12068,0 | HL63x178 | | | | |
| | | 203,0 | 198,0 | 40,6 | 8039,0 | 50,8 | 10058,0 | 60,9 | 12058,0 | HL63x203 | | | | |
| | | 254,0 | 155,0 | 50,8 | 7874,0 | 63,5 | 9843,0 | 76,2 | 11811,0 | HL63x254 | | | | |
| | | 305,0 | 128,0 | 61,0 | 7808,0 | 76,3 | 9766,0 | 91,5 | 11712,0 | HL63x305 | | | | |

Sistemske opruge

HENNLICH d.o.o. Beograd

| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | | | |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|------|--------------|--|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | Boja | Broj artikla | |
| 10,00 | 5,00 | 38,0 | 23,7 | 6,8 | 161,2 | 8,0 | 189,6 | 9,5 | 225,2 | Žuta | H10x38 | |
| | | 44,0 | 19,2 | 7,9 | 151,7 | 9,2 | 176,6 | 11,0 | 211,2 | | H10x44 | |
| | | 51,0 | 16,5 | 9,2 | 151,8 | 10,7 | 176,6 | 13,0 | 214,5 | | H10x51 | |
| | | 64,0 | 13,2 | 11,5 | 151,8 | 13,4 | 176,9 | 16,0 | 211,2 | | H10x64 | |
| | | 76,0 | 10,9 | 13,7 | 149,3 | 16,0 | 174,4 | 19,0 | 207,1 | | H10x76 | |
| 12,50 | 6,30 | 25,0 | 58,5 | 4,5 | 263,3 | 5,3 | 310,1 | 6,2 | 362,7 | Žuta | H13x25 | |
| | | 32,0 | 43,9 | 5,8 | 254,6 | 6,7 | 294,1 | 8,0 | 351,2 | | H13x32 | |
| | | 38,0 | 36,0 | 6,8 | 244,8 | 8,0 | 288,0 | 9,5 | 342,0 | | H13x38 | |
| | | 44,0 | 30,3 | 7,9 | 239,4 | 9,2 | 278,8 | 11,0 | 333,3 | | H13x44 | |
| | | 51,0 | 26,2 | 9,2 | 241,0 | 10,7 | 280,3 | 13,0 | 340,6 | | H13x51 | |
| | | 64,0 | 21,2 | 11,5 | 243,8 | 13,4 | 284,1 | 16,0 | 339,2 | | H13x64 | |
| | | 76,0 | 17,1 | 13,7 | 234,3 | 16,0 | 273,6 | 19,0 | 324,9 | | H13x76 | |
| | | 89,0 | 14,5 | 16,0 | 232,0 | 18,7 | 271,2 | 22,0 | 319,0 | | H13x89 | |
| | | 305,0 | 4,3 | 54,9 | 236,1 | 64,0 | 275,2 | 76,0 | 326,8 | | H13x305 | |
| 16,00 | 8,00 | 25,0 | 118,0 | 4,5 | 531,0 | 5,3 | 625,4 | 6,2 | 731,6 | Žuta | H16x25 | |
| | | 32,0 | 89,0 | 5,8 | 516,2 | 6,7 | 596,3 | 8,0 | 712,0 | | H16x32 | |
| | | 38,0 | 72,1 | 6,8 | 490,3 | 8,0 | 576,8 | 9,5 | 685,0 | | H16x38 | |
| | | 44,0 | 60,9 | 7,9 | 481,1 | 9,2 | 560,3 | 11,0 | 669,9 | | H16x44 | |
| | | 51,0 | 52,3 | 9,2 | 481,2 | 10,7 | 559,6 | 13,0 | 679,9 | | H16x51 | |
| | | 64,0 | 41,2 | 11,5 | 473,8 | 13,4 | 552,1 | 16,0 | 659,2 | | H16x64 | |
| | | 76,0 | 34,1 | 13,7 | 467,2 | 16,0 | 545,6 | 19,0 | 647,9 | | H16x76 | |
| | | 89,0 | 29,5 | 16,0 | 472,0 | 18,7 | 551,7 | 22,0 | 649,0 | | H16x89 | |
| | | 102,0 | 25,6 | 18,4 | 471,0 | 21,4 | 547,8 | 26,0 | 665,6 | | H16x102 | |
| | | 305,0 | 8,4 | 54,9 | 461,2 | 64,0 | 537,6 | 76,0 | 638,4 | | H16x305 | |
| 20,00 | 10,00 | 25,0 | 293,0 | 4,5 | 1318,5 | 5,3 | 1552,9 | 6,2 | 1816,6 | Žuta | H20x25 | |
| | | 32,0 | 224,0 | 5,8 | 1299,2 | 6,7 | 1500,8 | 8,0 | 1792,0 | | H20x32 | |
| | | 38,0 | 177,0 | 6,8 | 1203,6 | 8,0 | 1416,0 | 9,5 | 1681,5 | | H20x38 | |
| | | 44,0 | 149,0 | 7,9 | 1177,1 | 9,2 | 1370,8 | 11,0 | 1639,0 | | H20x44 | |
| | | 51,0 | 128,0 | 9,2 | 1177,6 | 10,7 | 1369,6 | 13,0 | 1664,0 | | H20x51 | |
| | | 64,0 | 99,0 | 11,5 | 1138,5 | 13,4 | 1326,6 | 16,0 | 1584,0 | | H20x64 | |
| | | 76,0 | 81,7 | 13,7 | 1119,3 | 16,0 | 1307,2 | 19,0 | 1552,3 | | H20x76 | |
| | | 89,0 | 69,5 | 16,0 | 1112,0 | 18,7 | 1299,7 | 22,0 | 1529,0 | | H20x89 | |
| | | 102,0 | 60,6 | 18,4 | 1115,0 | 21,4 | 1296,8 | 26,0 | 1575,6 | | H20x102 | |
| | | 115,0 | 53,0 | 20,7 | 1097,1 | 24,2 | 1282,6 | 29,0 | 1537,0 | | H20x115 | |
| | | 127,0 | 47,5 | 22,9 | 1087,8 | 26,7 | 1268,3 | 32,0 | 1520,0 | | H20x127 | |
| | | 139,0 | 43,0 | 25,0 | 1075,0 | 29,2 | 1255,6 | 35,0 | 1505,0 | | H20x139 | |
| | | 152,0 | 39,0 | 27,4 | 1068,6 | 32,0 | 1248,0 | 38,0 | 1482,0 | | H20x152 | |
| | | 305,0 | 21,2 | 54,9 | 1163,9 | 64,0 | 1356,8 | 76,0 | 1611,2 | | H20x305 | |
| 25,00 | 12,50 | 32,0 | 374,4 | 5,8 | 2171,5 | 6,7 | 2508,5 | 8,0 | 2995,2 | Žuta | H26x32 | |
| | | 38,0 | 346,0 | 6,8 | 2352,8 | 8,0 | 2768,0 | 9,5 | 3287,0 | | H26x38 | |
| | | 44,0 | 244,0 | 7,9 | 1927,6 | 9,2 | 2244,8 | 11,0 | 2684,0 | | H26x44 | |
| | | 51,0 | 207,5 | 9,2 | 1909,0 | 10,7 | 2220,3 | 13,0 | 2697,5 | | H26x51 | |
| | | 64,0 | 161,0 | 11,5 | 1851,5 | 13,4 | 2157,4 | 16,0 | 2576,0 | | H26x64 | |
| | | 76,0 | 130,8 | 13,7 | 1792,0 | 16,0 | 2092,8 | 19,0 | 2485,2 | | H26x76 | |
| | | 89,0 | 110,5 | 16,0 | 1768,0 | 18,7 | 2066,4 | 22,0 | 2431,0 | | H26x89 | |
| | | 102,0 | 96,3 | 18,4 | 1771,9 | 21,4 | 2060,8 | 26,0 | 2503,8 | | H26x102 | |
| | | 115,0 | 85,7 | 20,7 | 1774,0 | 24,2 | 2073,9 | 29,0 | 2485,3 | | H26x115 | |
| | | 127,0 | 76,3 | 22,9 | 1747,3 | 26,7 | 2037,2 | 32,0 | 2441,6 | | H26x127 | |
| | | 152,0 | 63,5 | 27,4 | 1739,9 | 32,0 | 2032,0 | 38,0 | 2413,0 | | H26x152 | |
| | | 178,0 | 53,9 | 32,0 | 1724,8 | 37,4 | 2015,9 | 44,0 | 2371,6 | | H26x178 | |
| | | 203,0 | 47,0 | 36,5 | 1715,5 | 42,6 | 2002,2 | 51,0 | 2397,0 | | H26x203 | |
| | | 305,0 | 30,9 | 54,9 | 1696,4 | 64,0 | 1977,6 | 76,0 | 2348,4 | | H26x305 | |



Sistemske opruge

HENNLICH d.o.o. Beograd

| Dimenzije | | | Čelik 1.8159, hod opruge i sile | | | | | | | Boja | Broj artikla |
|----------------------|----------------------|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|------------------------|-----------------------|------|--------------|
| D _h mm | D _d mm | L ₀ mm | R N/mm | s ₁ mm | F ₁ N | s ₂ mm | F ₂ N | s _{max} mm | F _{max} N | | |
| 32,00 | 16,00 | 38,0 | 528,2 | 6,8 | 3591,8 | 8,0 | 4225,6 | 9,5 | 5017,9 | Žuta | H32x38 |
| | | 44,0 | 424,4 | 7,9 | 3352,8 | 9,2 | 3904,5 | 11,0 | 4668,4 | | H32x44 |
| | | 51,0 | 353,0 | 9,2 | 3247,6 | 10,7 | 3777,1 | 13,0 | 4589,0 | | H32x51 |
| | | 64,0 | 269,2 | 11,5 | 3095,8 | 13,4 | 3607,3 | 16,0 | 4307,2 | | H32x64 |
| | | 76,0 | 218,5 | 13,7 | 2993,5 | 16,0 | 3496,0 | 19,0 | 4151,5 | | H32x76 |
| | | 89,0 | 180,3 | 16,0 | 2884,8 | 18,7 | 3371,6 | 22,0 | 3966,6 | | H32x89 |
| | | 102,0 | 155,0 | 18,4 | 2852,0 | 21,4 | 3317,0 | 26,0 | 4030,0 | | H32x102 |
| | | 115,0 | 140,0 | 20,7 | 2898,0 | 24,2 | 3388,0 | 29,0 | 4060,0 | | H32x115 |
| | | 127,0 | 124,0 | 22,9 | 2839,6 | 26,7 | 3310,8 | 32,0 | 3968,0 | | H32x127 |
| | | 152,0 | 102,0 | 27,4 | 2794,8 | 32,0 | 3264,0 | 38,0 | 3876,0 | | H32x152 |
| | | 178,0 | 88,2 | 32,0 | 2822,4 | 37,4 | 3298,7 | 44,0 | 3880,8 | | H32x178 |
| | | 203,0 | 76,0 | 36,5 | 2774,0 | 42,6 | 3237,6 | 51,0 | 3876,0 | | H32x203 |
| | | 254,0 | 60,8 | 45,7 | 2778,6 | 53,3 | 3240,6 | 64,0 | 3891,2 | | H32x254 |
| 305,0 | 49,0 | 54,9 | 2690,1 | 64,0 | 3136,0 | 76,0 | 3724,0 | H32x305 | | | |
| 40,00 | 20,00 | 51,0 | 628,0 | 9,2 | 5777,6 | 10,7 | 6719,6 | 13,0 | 8164,0 | Žuta | H40x51 |
| | | 64,0 | 487,0 | 11,5 | 5600,5 | 13,4 | 6525,8 | 16,0 | 7792,0 | | H40x64 |
| | | 76,0 | 379,0 | 13,7 | 5192,3 | 16,0 | 6064,0 | 19,0 | 7201,0 | | H40x76 |
| | | 89,0 | 321,0 | 16,0 | 5136,0 | 18,7 | 6002,7 | 22,0 | 7062,0 | | H40x89 |
| | | 102,0 | 281,0 | 18,4 | 5170,4 | 21,4 | 6013,4 | 26,0 | 7306,0 | | H40x102 |
| | | 115,0 | 245,0 | 20,7 | 5071,5 | 24,2 | 5929,0 | 29,0 | 7105,0 | | H40x115 |
| | | 127,0 | 221,0 | 22,9 | 5060,9 | 26,7 | 5900,7 | 32,0 | 7072,0 | | H40x127 |
| | | 152,0 | 168,0 | 27,4 | 4603,2 | 32,0 | 5376,0 | 38,0 | 6384,0 | | H40x152 |
| | | 203,0 | 132,0 | 36,5 | 4818,0 | 42,6 | 5623,2 | 51,0 | 6732,0 | | H40x203 |
| | | 254,0 | 107,0 | 45,7 | 4889,9 | 53,3 | 5703,1 | 64,0 | 6848,0 | | H40x254 |
| | | 305,0 | 87,8 | 54,9 | 4820,2 | 64,0 | 5619,2 | 76,0 | 6672,8 | | H40x305 |
| 50,00 | 25,00 | 64,0 | 709,0 | 11,5 | 8153,5 | 13,4 | 9500,6 | 16,0 | 11344,0 | Žuta | H51x64 |
| | | 76,0 | 572,0 | 13,7 | 7836,4 | 16,0 | 9152,0 | 19,0 | 10868,0 | | H51x76 |
| | | 89,0 | 475,0 | 16,0 | 7600,0 | 18,7 | 8882,5 | 22,0 | 10450,0 | | H51x89 |
| | | 102,0 | 405,0 | 18,4 | 7452,0 | 21,4 | 8667,0 | 26,0 | 10530,0 | | H51x102 |
| | | 115,0 | 352,0 | 20,7 | 7286,4 | 24,2 | 8518,4 | 29,0 | 10208,0 | | H51x115 |
| | | 127,0 | 316,0 | 22,9 | 7236,4 | 26,7 | 8437,2 | 32,0 | 10112,0 | | H51x127 |
| | | 152,0 | 239,0 | 27,4 | 6548,6 | 32,0 | 7648,0 | 38,0 | 9082,0 | | H51x152 |
| | | 203,0 | 187,0 | 36,5 | 6825,5 | 42,6 | 7966,2 | 51,0 | 9537,0 | | H51x203 |
| | | 254,0 | 153,0 | 45,7 | 6992,1 | 53,3 | 8154,9 | 64,0 | 9792,0 | | H51x254 |
| | | 305,0 | 127,0 | 54,9 | 6972,3 | 64,0 | 8128,0 | 76,0 | 9652,0 | | H51x305 |
| 63,00 | 38,00 | 76,0 | 952,0 | 12,9 | 12280,0 | 15,2 | 14470,0 | - | - | Žuta | H63x76 |
| | | 89,0 | 819,0 | 15,1 | 12360,0 | 17,8 | 14580,0 | - | - | | H63x89 |
| | | 102,0 | 700,0 | 17,3 | 12110,0 | 20,4 | 14280,0 | 25,5 | 17850,0 | | H63x102 |
| | | 115,0 | 620,0 | 19,6 | 12152,0 | 23,0 | 14260,0 | 28,8 | 17860,0 | | H63x115 |
| | | 127,0 | 565,0 | 21,6 | 12204,0 | 25,4 | 14351,0 | 31,8 | 17967,0 | | H63x127 |
| | | 152,0 | 458,0 | 25,8 | 11816,0 | 30,4 | 13923,0 | 38,0 | 17404,0 | | H63x152 |
| | | 178,0 | 384,0 | 30,3 | 11635,0 | 35,6 | 13670,0 | 44,5 | 17088,0 | | H63x178 |
| | | 203,0 | 337,0 | 34,5 | 11627,0 | 40,6 | 13682,0 | 50,8 | 17120,0 | | H63x203 |
| 254,0 | 263,0 | 43,2 | 11362,0 | 50,8 | 13360,0 | 63,5 | 16701,0 | H63x254 | | | |
| 305,0 | 218,0 | 51,9 | 11314,0 | 61,0 | 13298,0 | 76,3 | 16633,0 | H63x305 | | | |